SHARP

Service Manual

RG-5900H
RG-5900E

ATSM580037CST

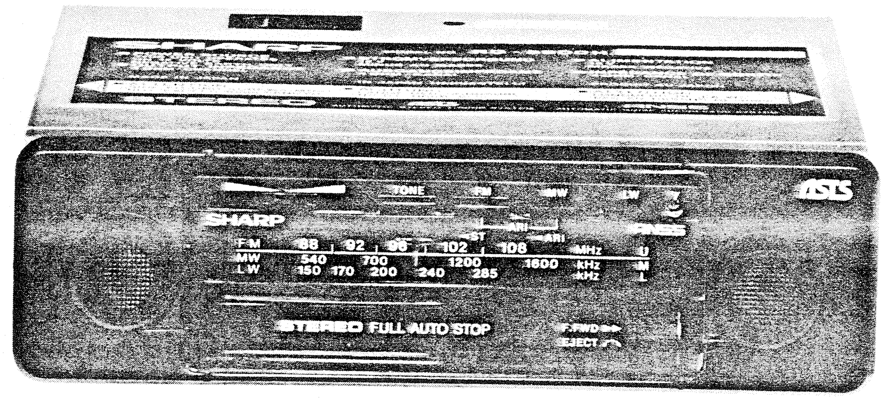

PHOTO: RG-5900H

ANSS

"In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used."

Solid State In-dash Type Cassette Car Stereo Player with LW/MW/FM/FM Stereo Radio and APSS

MODEL RG-5900H (With ARI) RG-5900E

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SHARP CORPORATION OSAKA, JAPAN

SPECIFICATIONS

GENERAL

Type:	Solid State In-dash Type 4-Track 2-channel Full Auto Stop Cassette Car Stereo Player with built-in LW/MW/FM/FM STEREO/ARI 3 band Radio. RG-5900E: without ARI
Power source:	12V (for negative earthing car only)
Output impedance:	4 ohms/channel
Semiconductors:	RG-5900H: 17-transistor (1-FET), 15 diode (2-LED) and 7-IC (integrated circuit)
	RG-5900E: 10-transistor (1-FET), 5-diode (1-LED) and 5-IC (integrated circuit)
Output power:	8W + 8W (maximum power)
	5W + 5W (at 10% distortion)
S/N:	54dB
Dimensions:	178(W) x 138(D) x 44(H) mm
Weight:	1.3 Kg

TAPE PLAYER SECTION

Playback system:	4-track, 2-channel Stereo
Using tape:	Philips standard compact cassette tape
Tape speed:	4.75 cm/sec.
Wow and flutter:	0.3% (DIN 45 511)
Frequency response:	50Hz ~ 10kHz/–6dB
Fast forward/ Rewind time:	120 seconds (@ C-60 cassette tape)
Motor:	D.C. motor with medhanical governor

RADIO SECTION

Frequency range:	LW 150 ~ 285kHz
	MW 520 ~ 1,620kHz
	FM 87.6 ~ 108MHz
IF:	LW/MW 452kHz
	FM 10.7MHz
Sensitivity:	LW 400μV/20dB
	MW 40μV/20dB
	FM 2.5μV

Specifications are subject to change without prior notice.

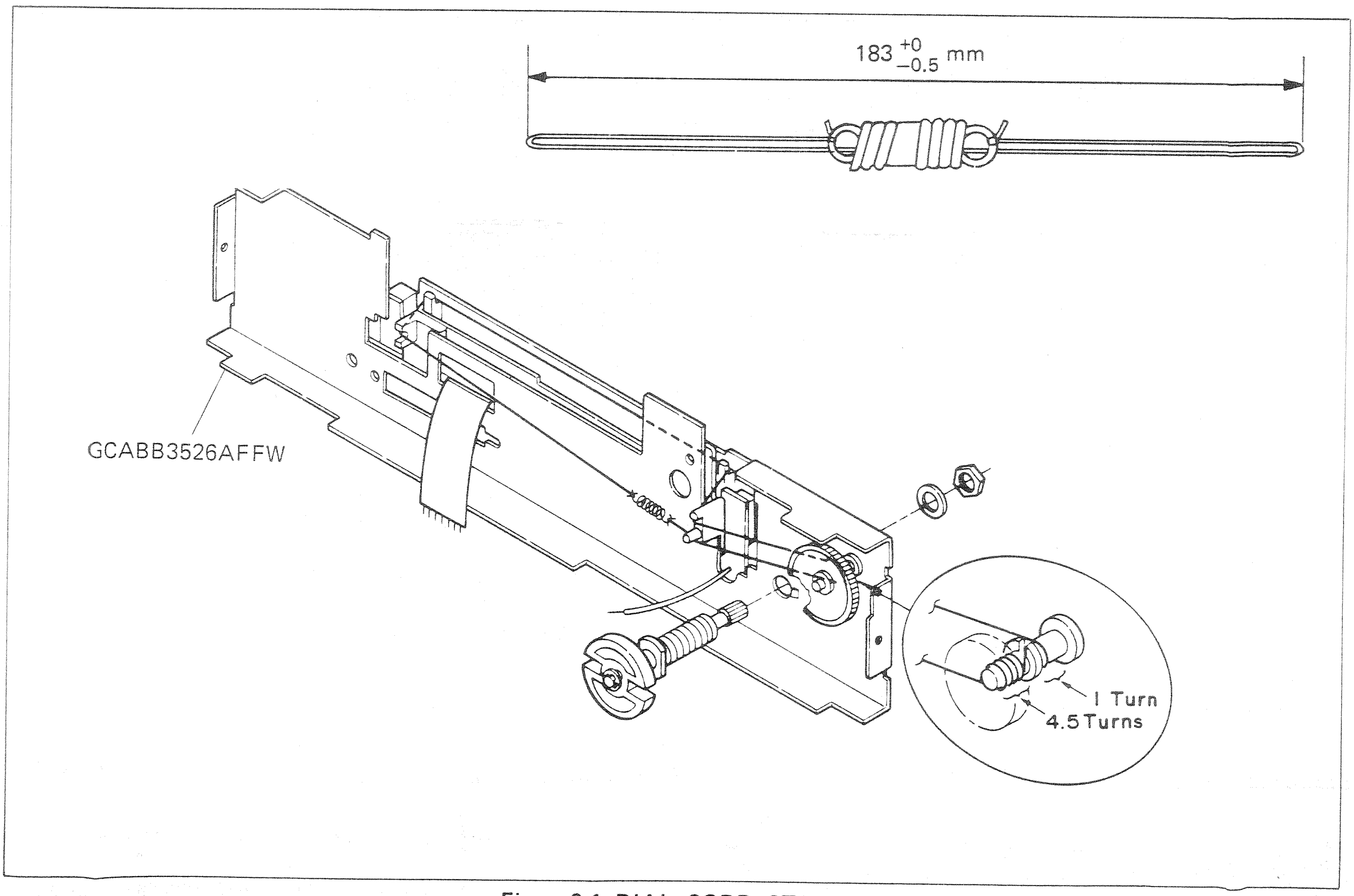


Figure 2-1 DIAL CORD STRINGING

PARTS LAYOUT

1 Balance Control Knob (JKNBP0103AFSA)
2 Tone Control Knob (JKNBM0345AFSA)
3 Band Selector Knob (JKNBM0345AFSA)
4 Aerial Trimmer (TC1) (RTO-A1057AFZZ)
5 Power ON-OFF/Volume Control Knob (JKNBK0201AFSA)
6 Cassette Compartment (GFTAC3065AFSA)
7 FM Stereo Indicator (RH-PX1008AFZZ)
8 ARI Indicator (RG-5900H only, VHPGL-9NG12-1)
9 Cassette Ejection Button/Release Button for Fast-forward Winding Knob (JKNBM0344AFSA)
10 Tuning Control Knob (JKNBK0201AFSA)

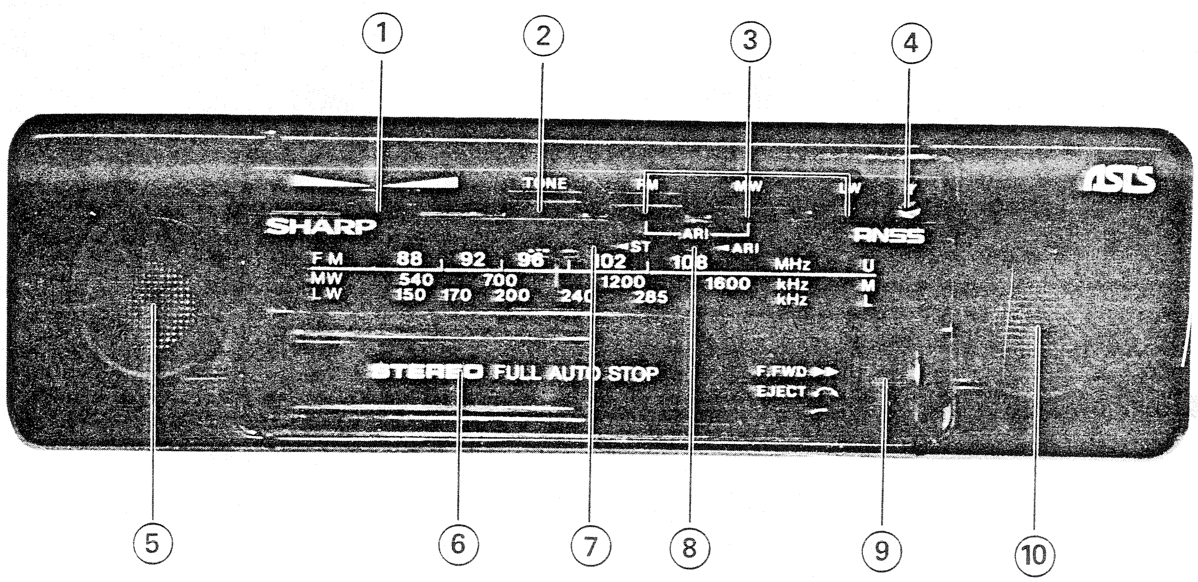


PHOTO: RG-5900H

Figure 3-1 FRONT PARTS LAYOUT

11 Earth Terminal
12 Aerial Socket (QSOCZ0015AFZZ)
13 DC Input Terminal (QSOCD0271AFZZ)
14 Speaker Terminal (QSOCD0271AFZZ)

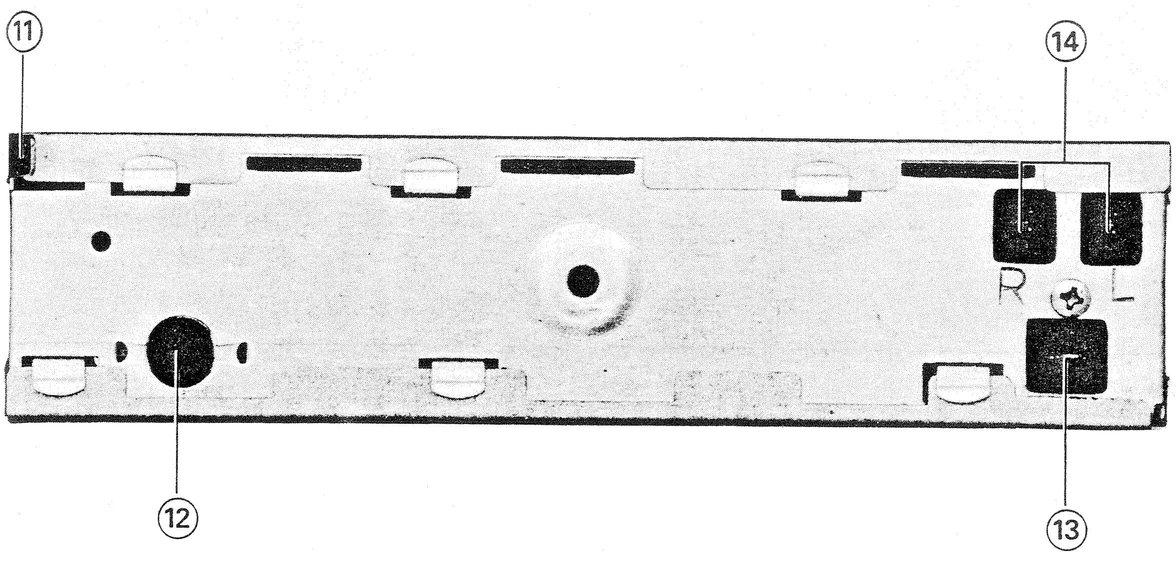


PHOTO: RG-5900H

Figure 3-2 REAR PARTS LAYOUT

DISASSEMBLY

1. Remove the Bottom cabinet, then take it out. (See Fig. 4-1)
2. Remove the nose piece, then take it out. (See Fig. 4-2)
3. Remove the five screws retaining the Mechanism chassis at the right, left and front cabinet surfaces. (See Fig. 4-3)
4. Pull out the two wiring connecting sockets provided on the printed wiring board. (See Fig. 4-4)

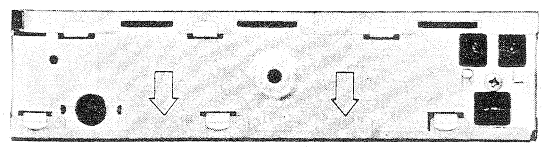


Figure 4-1

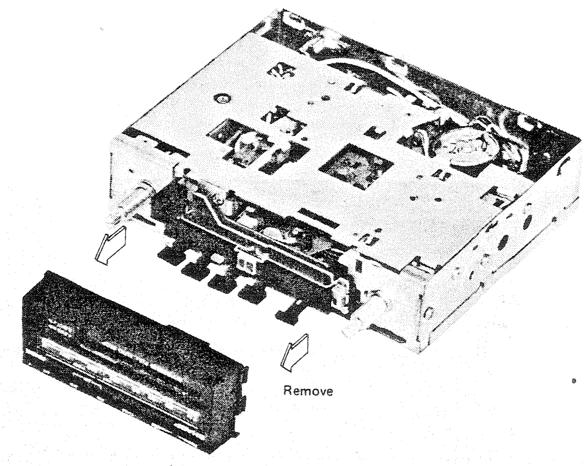


Figure 4-2

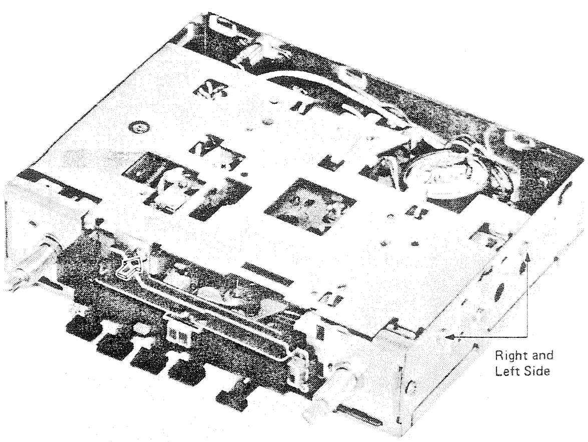


Figure 4-3

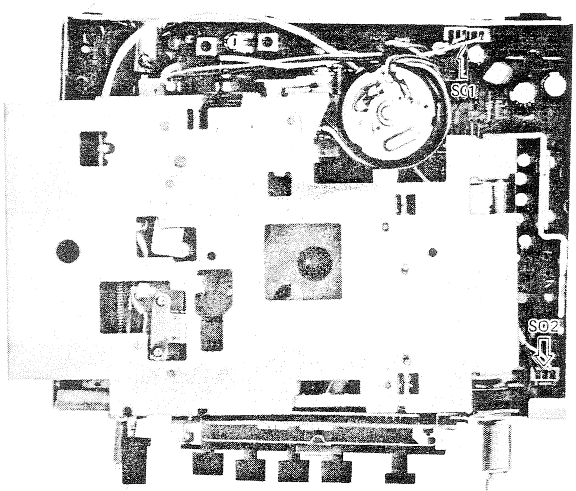


Figure 4-4

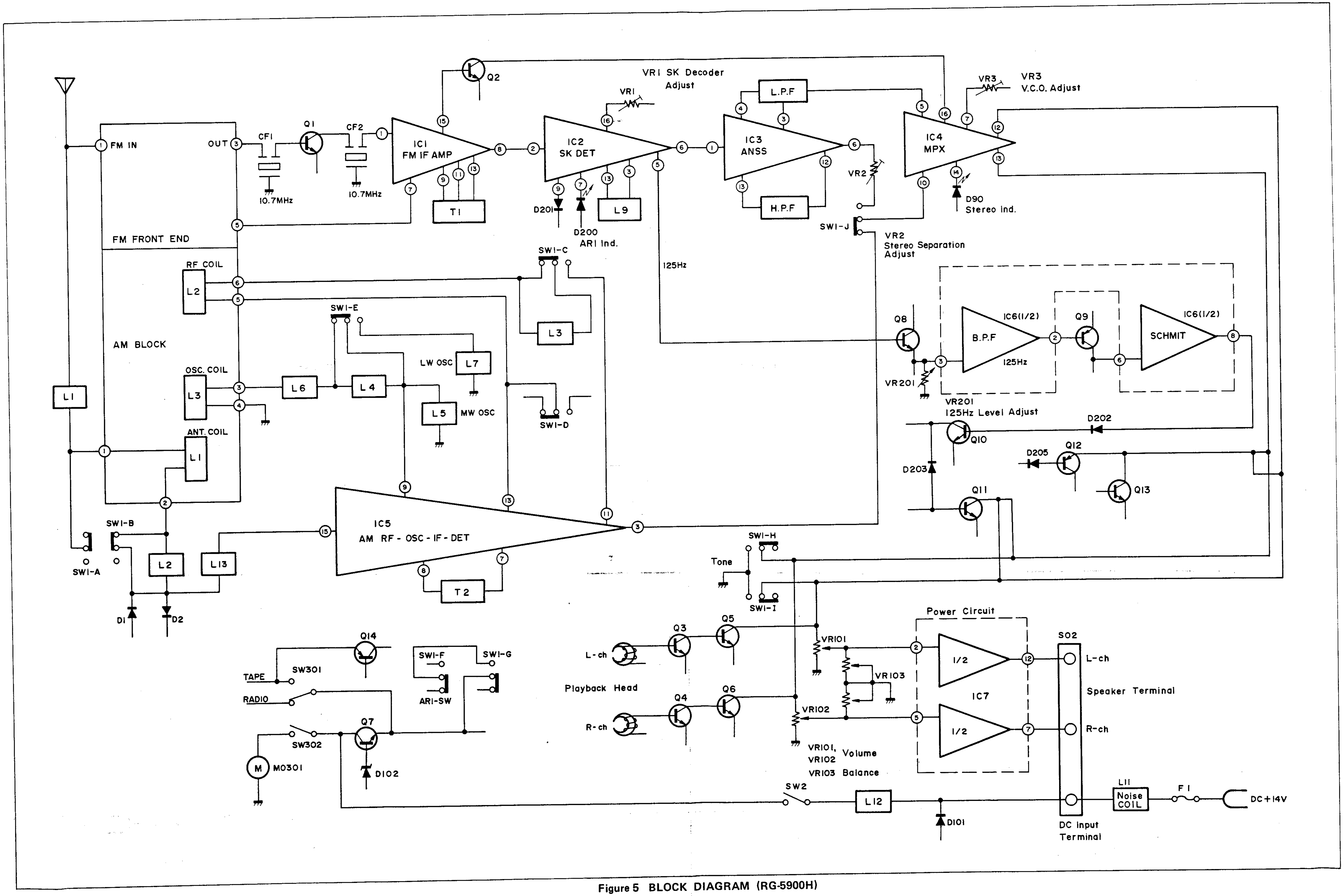


Figure 5 BLOCK DIAGRAM (RG-5900H)

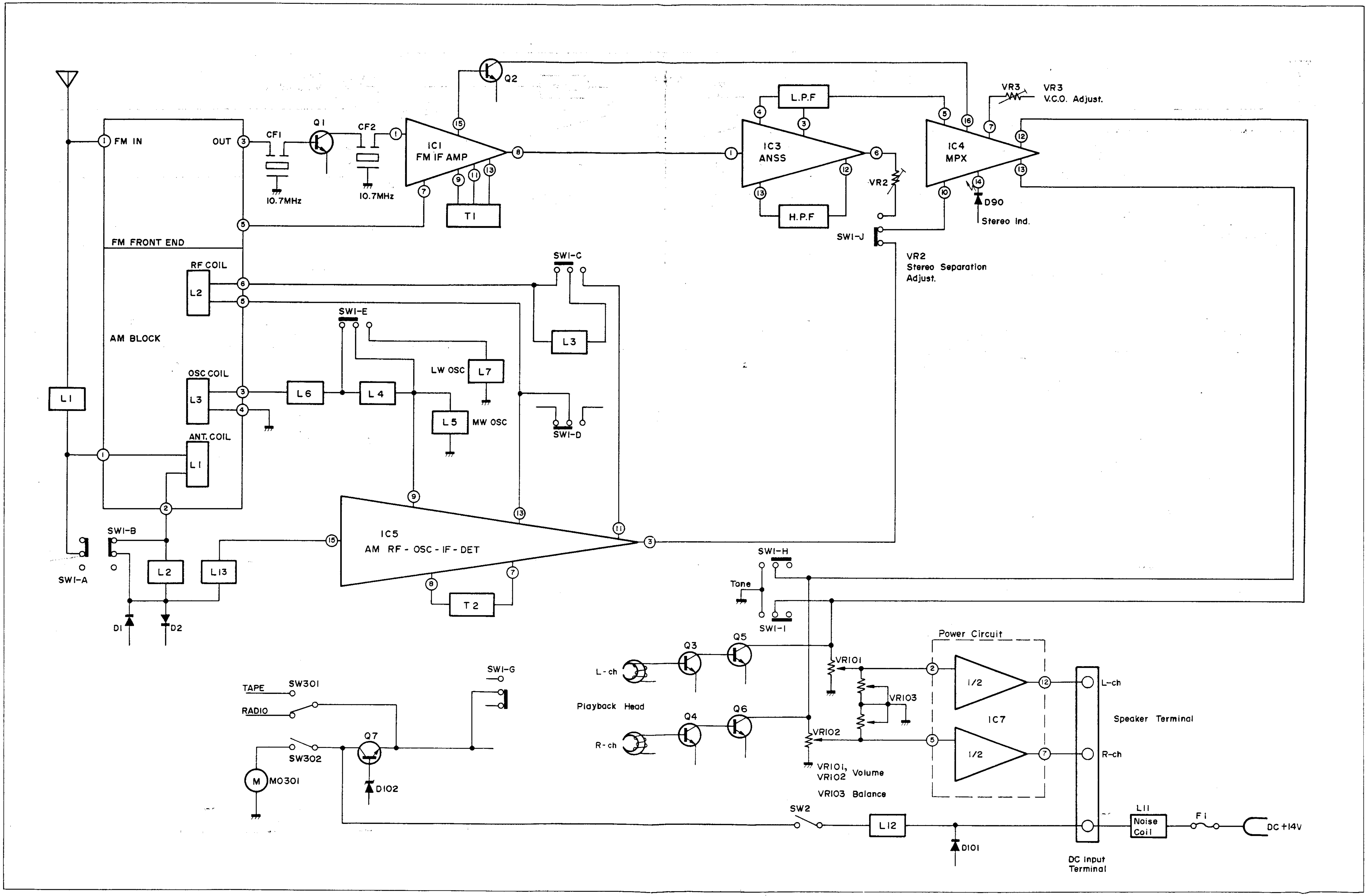


Figure 7 BLOCK DIAGRAM (RG-5900E)

ANSS (Automatic Noise Suppressor System)

SUMMARY

Electrical interferences generated by cumbustion engines used in motor-cars are necessary to be suppressed to make listening to FM broadcastings possible. An effective way to suppress interferences produced by its own car and those of others received via the antenna is to apply a kind of noise gating for the output signal of the FM demodulator. Since the mentioned interferenced have a frequency spectrum upto several hundreds of kHz being easily reproduced by the FM demodulator there is sufficient signal available beyond 53kHz to drive this gating circuit. Based upon these principles the ANSS has been devoloped.

INTRODUCTION

In the FM car radio, pulse noise received via the antenna becomes unpleasant noise that interferes with the happy FM listening, passing the circuits between the antenna and the speaker. The ANSS is a device that can automatically remove such pulse noises from the incoming signals, so only the desired signals will be obtained. Being detected at the FM detector, both the desired signal and pulse noise, caught by the antenna, are superposed each other as shown in Figure 9-1. Then they are applied to the ANSS circuit where only the desired signal is developed since the noisy one is removed.

The bandwidth of the ANSS, necessary for a good stereo signal, has to be about:

38 kHz + 15 kHz =53 kHz.
(Stereo subcarrier) (Upper side band channel)

For stereo signal reception, the arriving signals are applied to the gate circuit of the ANSS, in order to prevent the pilot signal from undergoing amplitude modulation (which causes noisy sound through the succeeding circuits), this pilot signal is first supplied to the 19 kHz trap filter, located prior to the gate circuit, where it is removed and only the audio signal can appear at the ANSS circuit then to be applied to the stereo multiplex circuit.

In addition, before being supplied to the 19kHz trap filter, a part of the stereo pilot signal is also applied to the VCO circuit, a part of the stereo multiplex circuit. Since the VCO circuit is of PLL system, if the pilot signal enter the VCO circuit, the PLL becomes completely locked so as to eliminate any possiblity of noise occurrence in the stereo multiplex circuit due to the noise entered together with the pilot signal. In this way pulse noise caught by the antenna is eliminated.

Another feature of this system is that in FM stereo reception, the signal to noise ratio is improved, because the stereo pilot signal has no possibility of mixing in the audio signal produced, being removed by the 19 kHz trap filter.

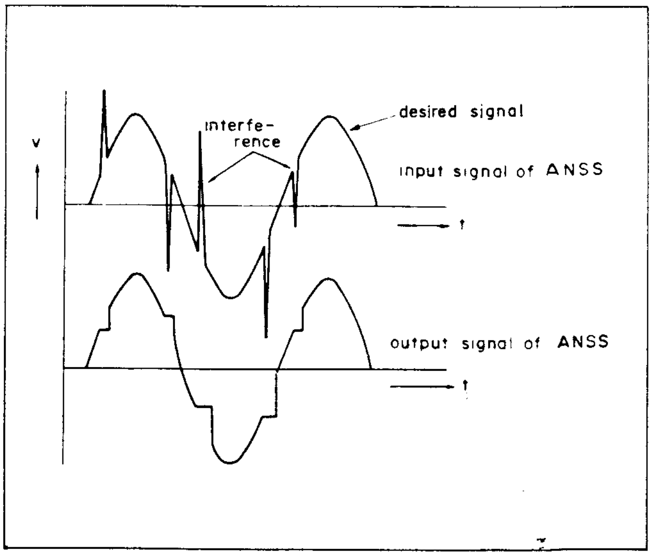


Figure 9-1

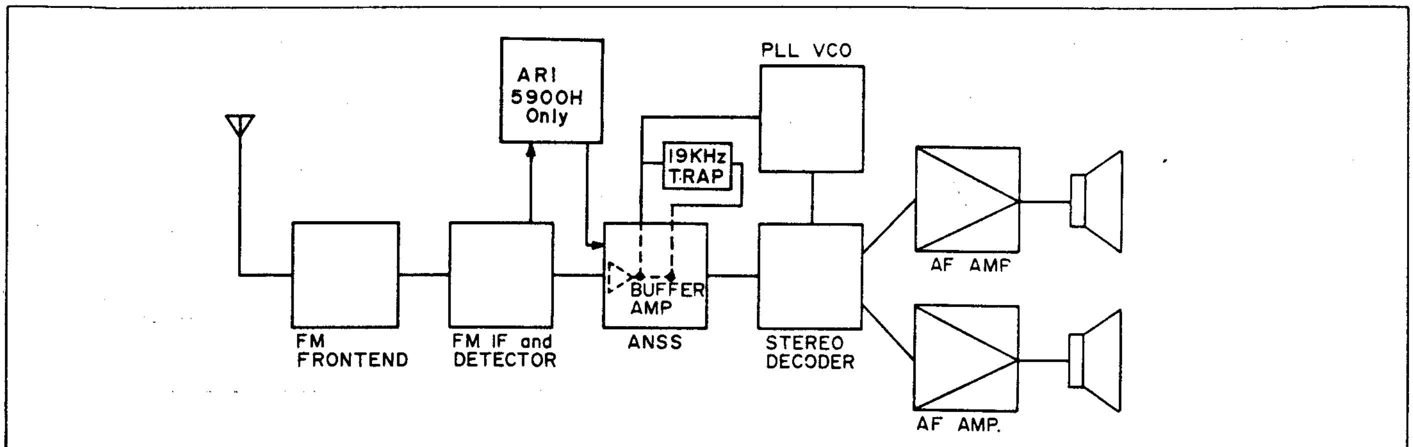


Figure 9-2 BLOCK DIAGRAM

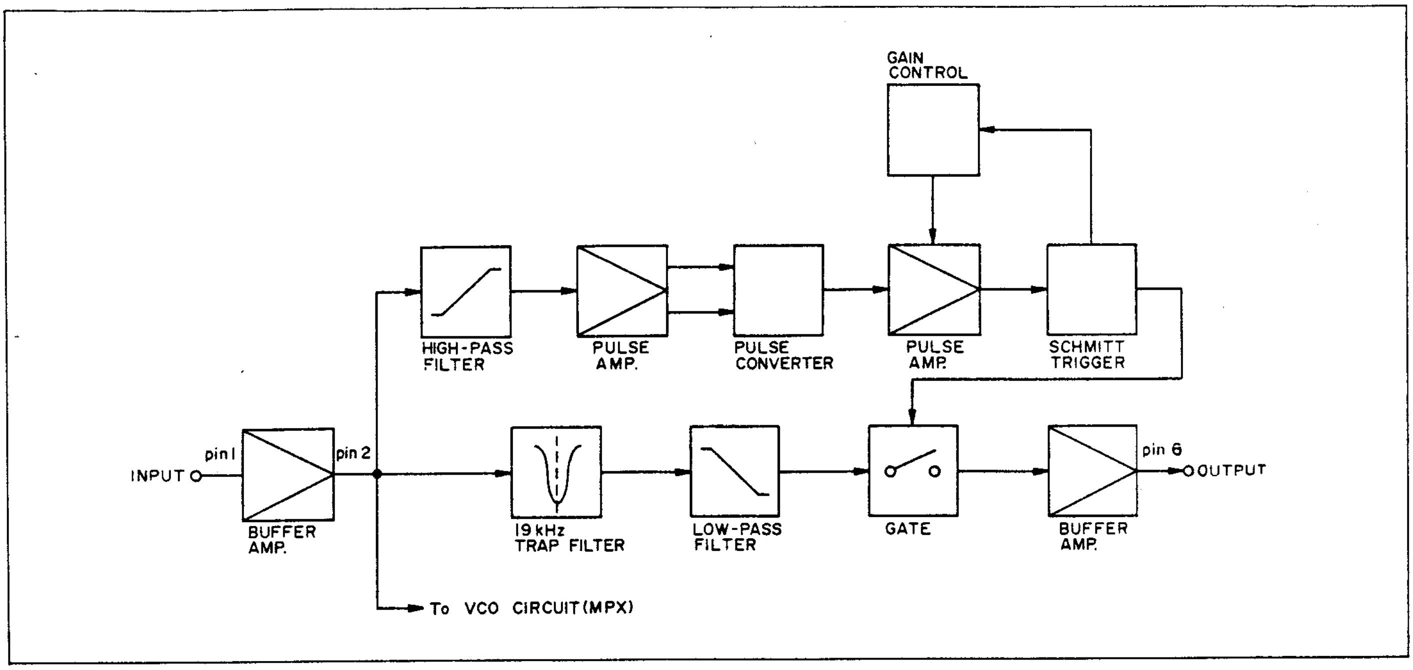


Figure 10-1

Explanation of the block diagram

Input signals at the pin 1, both the destred signal and pulse noise are appeared at the pin 2 via the buffer amplifier. Then, they are divided into the two, one to be applied to the high-pass filter side and another to the low-pass filter side.

In the high-pass filter, only pulse noise is picked out from the incoming signal, and this noise is amplified by the pulse amplifier. The noise thus amplified is transferred to the pulse converter where the negative pulse is converted to positive one to be supplied to the pulse amplifier where it is formed a strong signal enough to activate the Schmitt trigger.

Coming out of the Schmitt trigger, the signal is coupled to the gate circuit of the ANSS, which will be turned off. Also, the ANSS is equipped with the gain control circuit that will control the input signal of the Schmitt trigger, if a great amount of the continual pulse noises arrived, and prevent the gate circuit from turning off.

Meanwhile, in the low-pass filter side, the arriving signal is first applied to the 19 kHz trap filter where the stereo pilot signal is removed, and the remaining signal is coupled to the low-pass filter. The signal coming out of the low-pass filter, which has frequencies lower than 53 kHz, is then applied to the gate circuit. In this gate circuit, pulse noise, if being included in the input signal, will be got rid of and so only the desired signal will be developed.

However, being turned off, the gate circuit has no output. To prevent this, the ANSS is equipped with such a circuit that maintains output at the level just before the gate circuit is turned off. For this reason, there will be no secondary noise appe

secondary noise appearance caused by switching of the gate circuit.

It is noted that a part of the stereo pilot signal is, without entering the 19 kHz trap filter, coupled to the VCO circuit (of the stereo multiplex circuit) to drive.

DESCRIPTION OF THE CIRCUIT

Input stage

The input stage consists of a simple emitter follower, see Fig. 10-2.

This stage has been added to the circuit in order to avoid an influence of the input impedance of the L.P. and H.P. filters on the output of the FM detector and reversed. To be sure that the circuit works correctly, the DC voltage at pin 1 needs to be 0.4 x V_7-V_{14} (0.4 x supply voltage). The input impedance at 1 kHz : $|Zi| \geqslant 30$ K ohms.

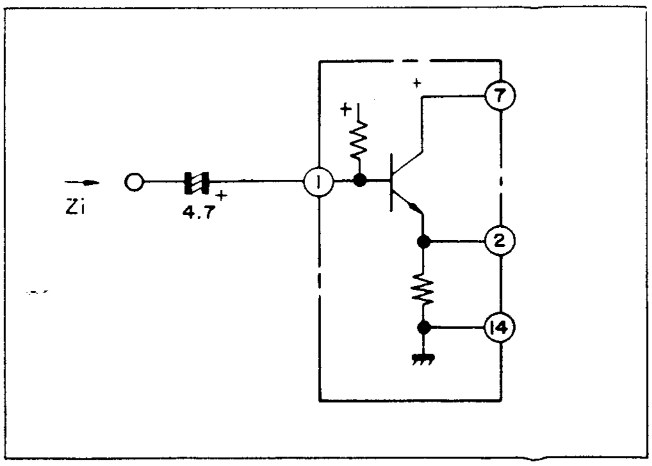


Figure 10-2

The low-pass filter (delay line)

To be sure of a good signal handling of the desired signal this filter has to meet next requirements.

a) the delay time has to be at least 3 μsec.

b) the amplitude characteristic has to be as flat as possible in the pass-band.

c) the phase behaviour has to be linear.

d) the distortion of the desired information at the output must be as low as possible.

In order to meet these requirements use is made of a 4th order Butterworth filter realised by an active RC circuit. (see Fig. 11—1).

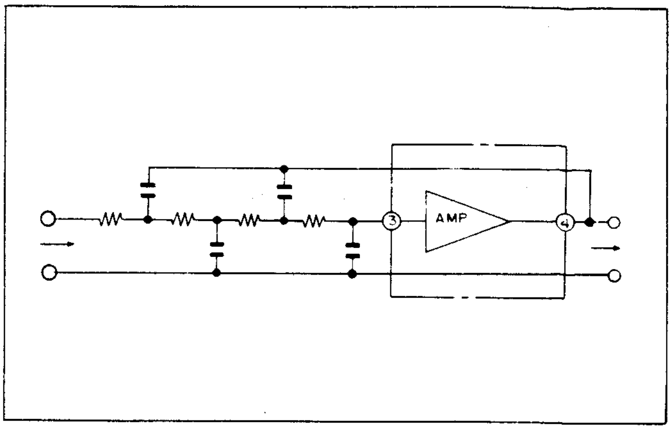


Figure 11-1

Gate circuit and output amplifier

The circuit is given in Fig. 11—2.

The point, indicated with P, is connected to the positive output of the Schmitt-trigger.

If there is a positive pulse at P then Qc becomes conducting and takes away the driving current for Qb. At the same time the base voltage of Qe will be kept constant by the RC circuit connected to pin 5.

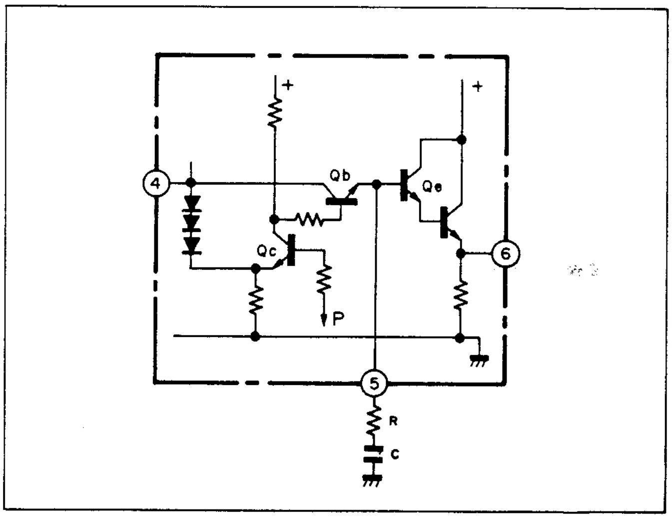


Figure 11-2

High pass filter

In order to detect the interferences out of the input signal a high pass filter is used.

In practive one wants to suppress as much interferences as possible in order to get a "clean" output signal.

The theorical curve of the H.P. filter has been given in Fig. 11—3.

A practical approximation of this curve can be achieved by a 4th order Chebyshev filter at which for car radio applications —3dB can be chosen at 91kHz.

To get a steep slope an extra R and C are added circuit.

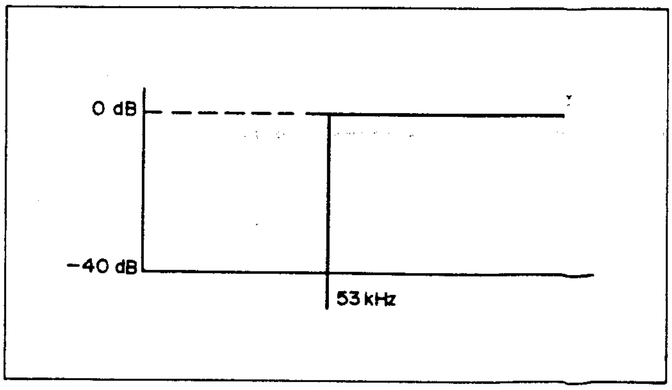


Figure 11-3

19 kHz filter

During suppression but without this filter the 19kHz signal will look like Fig. 11—4.

To be sure of no audible low-frequency component, the voltage during suppression needs to be zero. (See gap Fig. 11—4) However this happens only very sporadic so that filtering out of the undesired low frequency component is necessary, otherwise this low frequency component breaks through to the audio part via the MW-channel. Thus a 19kHz filter is added to the circuit.

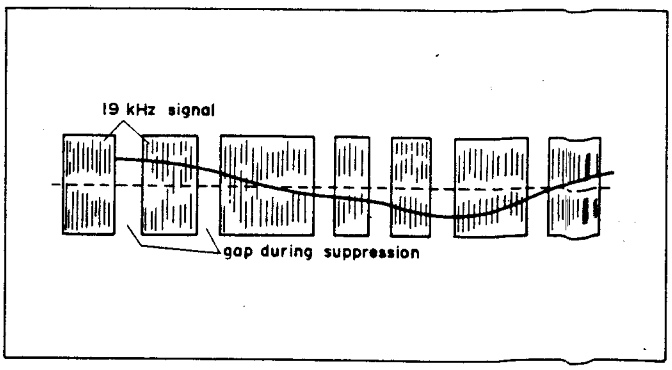


Figure 11-4

Gain control

The circuit is given in Fig. 12–1.

To be sure of an audible signal during a too high repetition rate of the interference pulses and/or a too intensive noise it is necessary to reduce the repetition rate of the suppression.

From the Schmitt-trigger the negative output pulses are fed to the integrating network connected to pin 10.

If Vc'' which is V7–10 becomes $\geqslant V_{BEQ_8}$ then the gain of the pulse amplifier will be reduced.

In case of noise, at which normally the "interference spikes" are very close to each other, it is better to build-up the voltage across C'' directly, because during one suppression time there are a lot of noise spikes.

This information for the gain control is lost if the negative output of Schmitt-trigger is used.

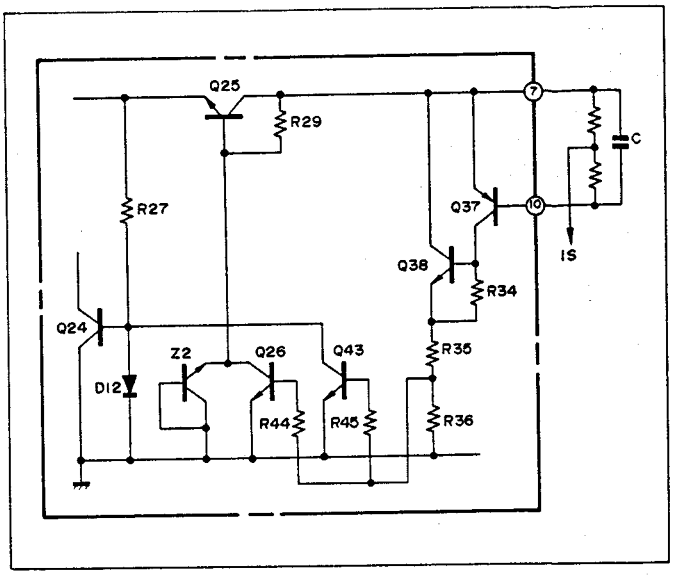


Figure 12-1

Schmitt-trigger

The circuit is shown in Fig. 12–2.

The positive output is used for driving the gate circuit while the negative output is fed to the gain control.

The pulse width of the pulses delivered by the Schmitt-trigger can be controlled by an RC network at pin 9 of Fig. 12–2.

The pulse-width as function of the value of the C° connected at pin 9 while the R° is kept constant at 6.8K, is given in Fig. 12–3.

For measurements the pulse at the input of the ANSS (pin 1) has a pulse width of 10 μsec., a rise time of 6 μsec. and a pulse hight of 0.1 V.

To ensure proper operation of the Schmitt trigger for various R°C° combinations it is advised to measure the pulse at pin 1 and pin 8.

The depicted signals should have a shape as shown in Fig. 12–4.

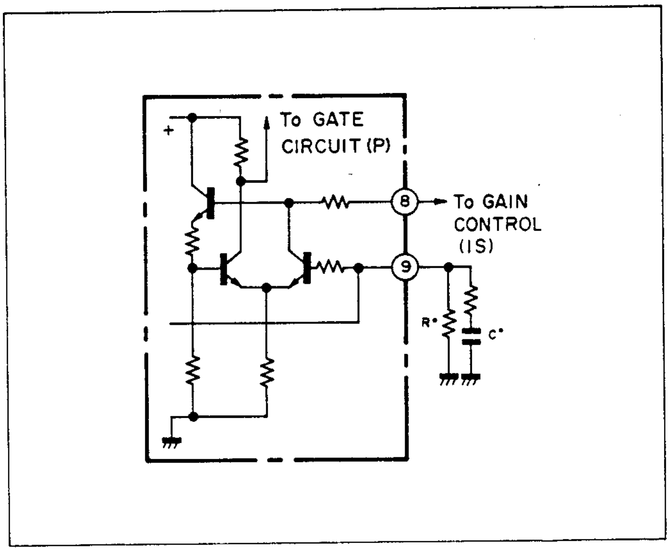


Figure 12-2

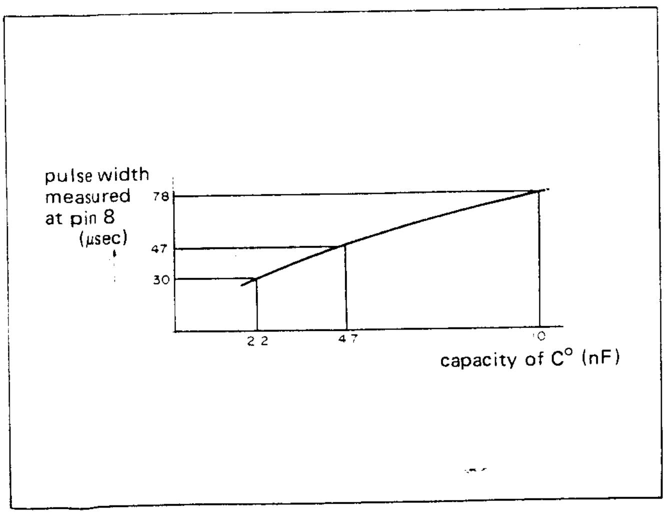


Figure 12-3

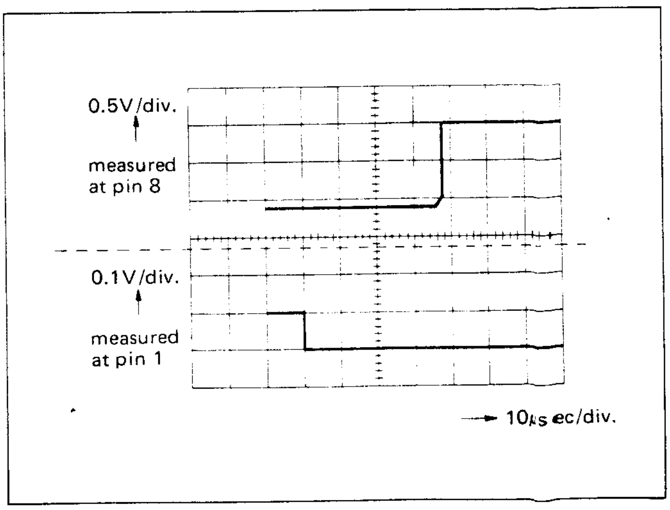


Figure 12-4

■ ARI System

The ARI circuit of the RG-5900H is activated when the band selector switch is set to "ARI" position — this position is actually achieved by pushing on its FM and MW buttons at a time — and it provides the following functions.

1) Unless the unit tunes in any SK station, the sound is kept muted (because of the action of IC2).
2) When the unit begins tuning in an SK station (without DK single included), the sound comes to be alive (because of the action of IC2 too).
3) When the unit begins tuning in an SK signal (now with DK signal present), it becomes possible to listen to the traffic information. Even if the volume control has been set at "MIN" position, the traffic information can still remain as loud as you can hear it. And even when the unit is playing the tape, the traffic information can be heard suppressing the tape play, which is enabled by the integrated circuit IC6 and the transistors Q8, Q9, Q10, Q11 and Q14.
4) About 20 seconds after the SK signal has disappeared, the alarm comes out — its output is of approx. 1 kHz sine wave.

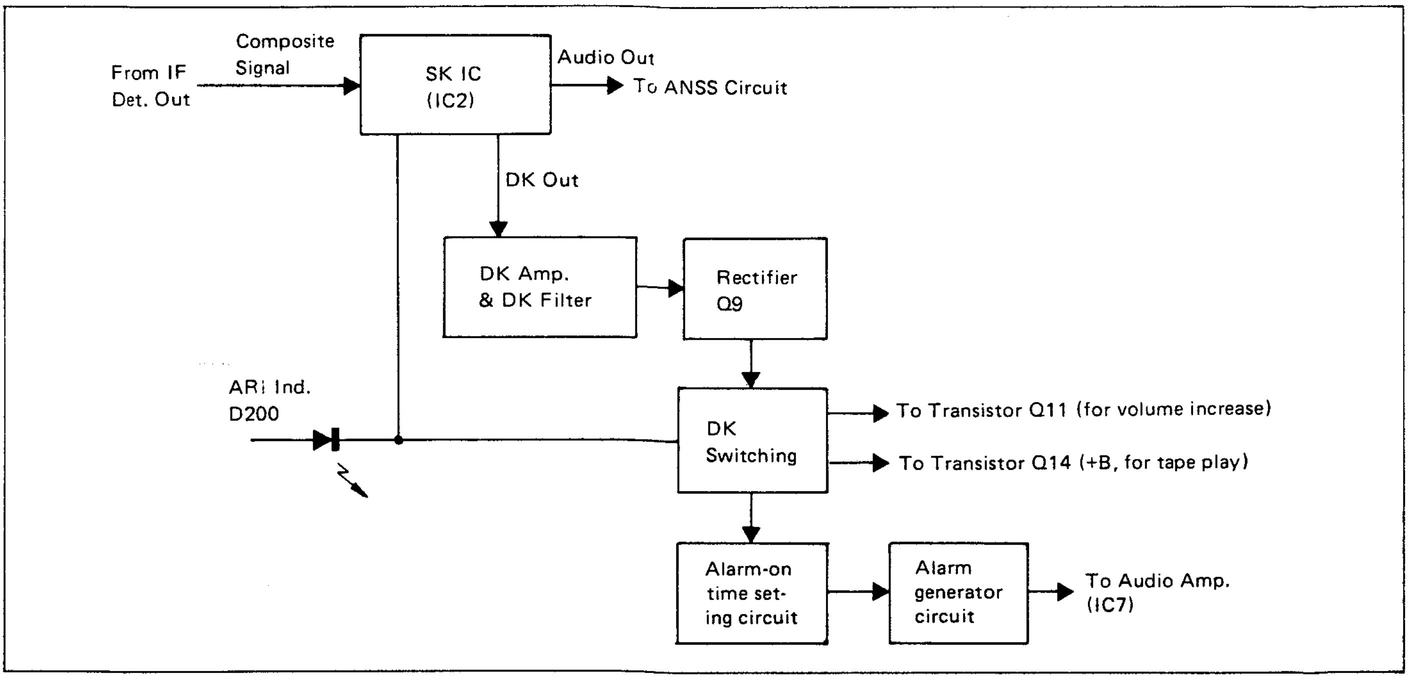


Figure 13-1 BLOCK DIAGRAM

■ SK Signal Control Circuit

The integrated circuit IC2 is aimed at controlling the SK signal and its structure is as shown in Fig. 14-1. The important functions of this circuit are found at its included two pins, pin 9 for the muting and pin 12 for V.C.O. control.

1) When the unit is tuning in ARI band, the V.C.O. becomes active to have the unit operate as follows:
   a) With pin 9 opened;
      In this case, only if there arises SK signal (57 kHz) at the input of pin 2, does the audio signal come out of pin 6.
   b) With pin 9 grounded;
      In this case, the audio signal always comes out of pin 6 even if the SK signal is absent at pin 2.
2) When the unit is tuning in other than ARI band:
   Then, the V.C.O. stops to operate so that the audio signal becomes alive whether pin 9 is opened or grounded.
   The electrolytic capacitor C201 in connection with pin 9 is for the purpose to decide the muting time constant (t_1) — just when the SK signal turns "off" (see Fig. 13-2).
   The output of pin 7 becomes "Low" level when given SK signal and "High" level when not given SK signal, and it also becomes "High" level when the V.C.O. ceases to operate.
   Pin 5 is the output pin where the BK and DK signals come out.

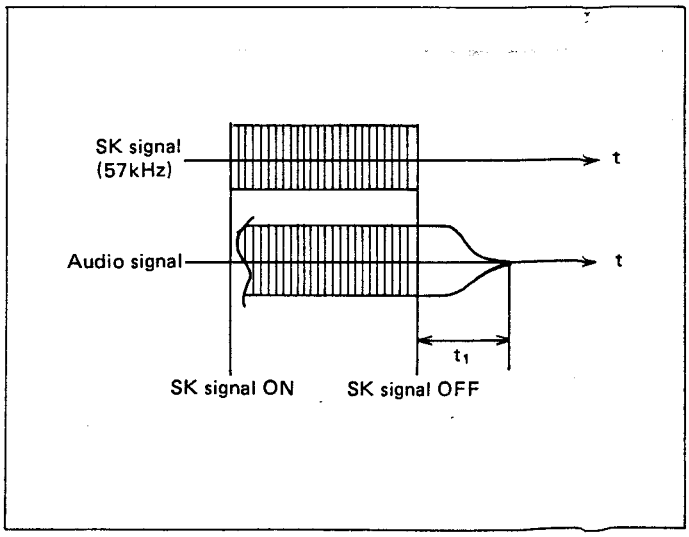


Figure 13-2

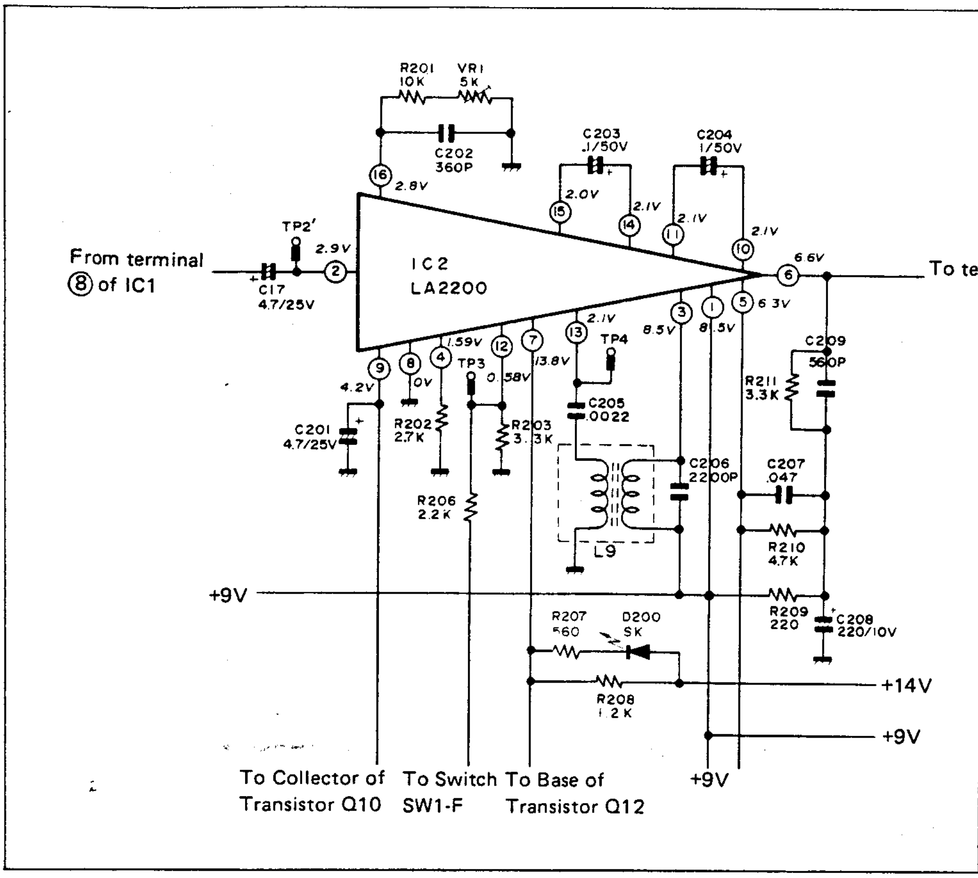


Figure 14-1 SK SIGNAL CONTROL CIRCUIT

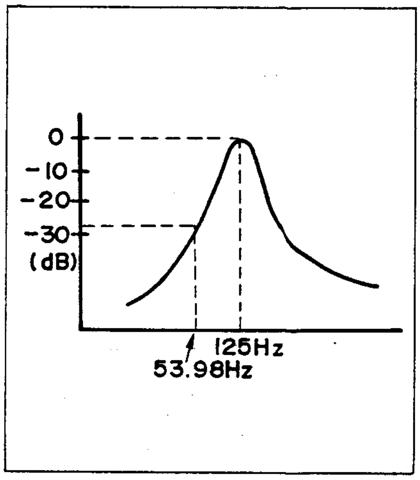


Figure 14-2

■ DK Control Circuit

See Fig. 14-3.

The DK control circuit is composed of an impedance converter (Q8), a band-pass filter (IC6, R214, R217, C210, C211 and VR201), a rectifier circuit (Q9) and Schmidt circuit (IC6). The impedance converter is to convert the impedance of the BK and DK signals which are gathered at pin ⑤ of IC2; the band-pass filter to separate only the DK signal from the mixture (of DK and BK signals); the rectifier circuit to turn the DK signal (of alternative current) into a direct current signal.

Let's consider in detail the action of this circuit:

The transistor Q8 is made an emitter follower circuit whose value is to activate the next band-pass filter even with its input impedance kept as low as possible, so that the BK/DK signal filtered out will have its impedance as low as possible too. Consisting of the capacitors, resistors and an operational amplifier, the band-pass filter provides such characteristic as shown in Fig. 14-2: the BK signal is attenuated by approx. 28 dB; its output signal is of 125 Hz which appears at pin ② of the operational amplifier IC6, and whose voltage is made constant (8.5 V) by the resistors R215 and R216. The output signal, then, enters the rectifier circuit (Q9), and the potential at its collector becomes "High" level only if there exists the DK signal to come here; therefore, the potential at pin ⑥ of IC6 also goes up to "High" level, and the output signal now present at pin ⑧ at "Low" low level before, becomes "High" level as well.

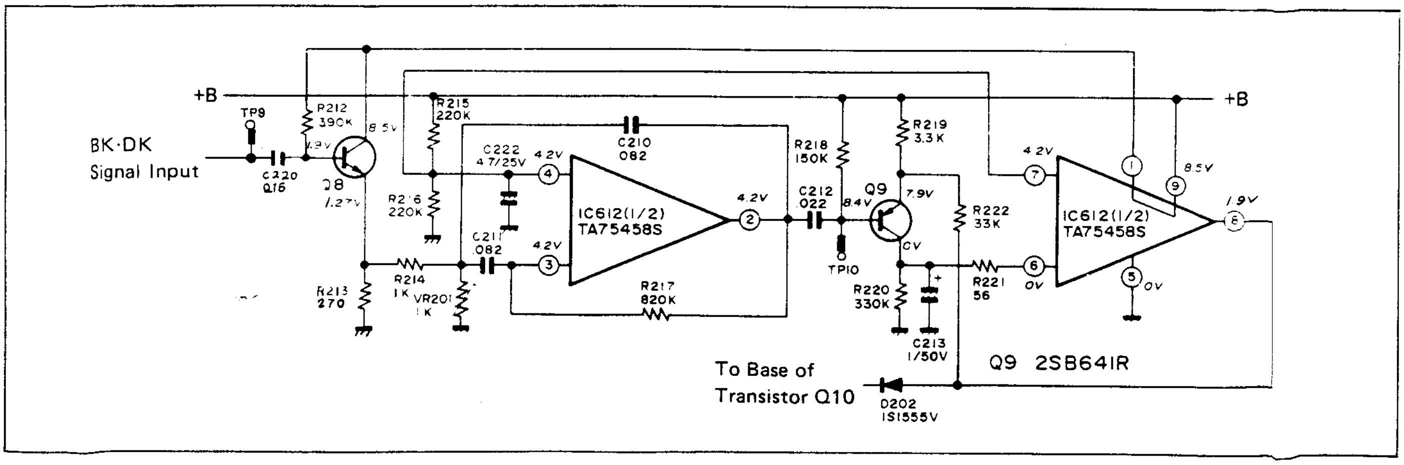


Figure 14-3 DK CONTROL CIRCUIT

How about DK switching

When the DK signal arrives at pin ⑥ of IC6, the output of pin ⑧ gets "High" level to turn on the transistor Q10, which results across the diode D206 in that the preamplifier (Q3 and Q4) turns off even if the tape/radio selector switch (SW301) has been set at "TAPE" position. As a result the tape-played sound is muted and at the same time the transistor Q14 is turned on to apply +B voltage to the multiplex IC (IC4) allowing the unit to make the radio signal (traffic information) alive. The traffic information is kept loud enough for us to hear it even if the volume control has been set at "MIN" position because that: if the transistor Q10 turns on first, then this causes the transistor Q11 to be off so that the output of IC4 can couple directly with pins ② and ⑤ of the power amplifier IC7 without passing through the volume control (set at "MIN" position) at all.

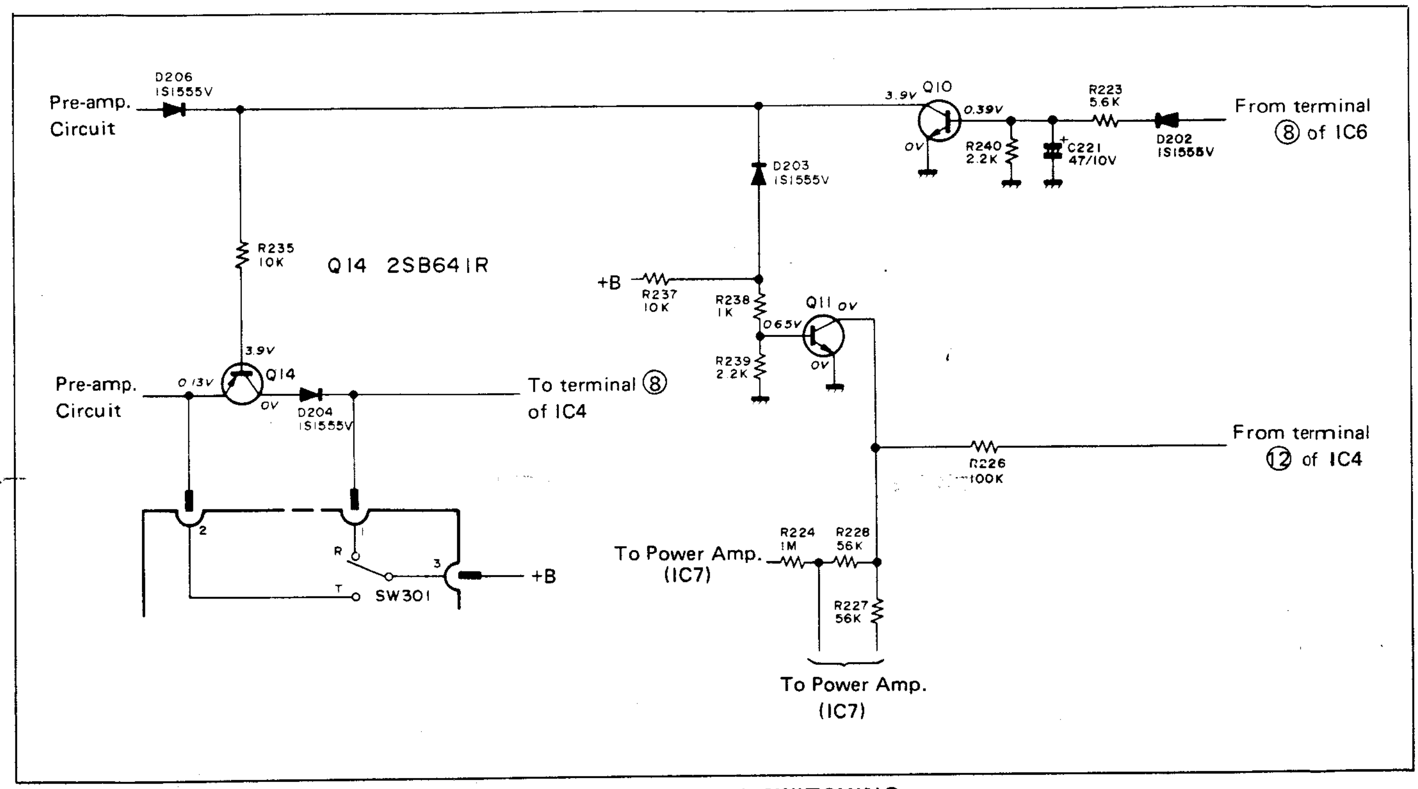


Figure 15-1 DK SWITCHING

■ Alarm Circuit

The moment the SK signal comes dead, the output of pin ⑦ of IC2 becomes "High" level and so the transistor Q12, about 20 seconds later, turns off through the diode D205 – this time constant is decided by the electrolytic capacitor C215 and resistor R229. The CR oscillator which consists of transistor Q13, resistor and capacitor, then, gets active to produce a signal of approx. 1 kHz letting the alarm go on.

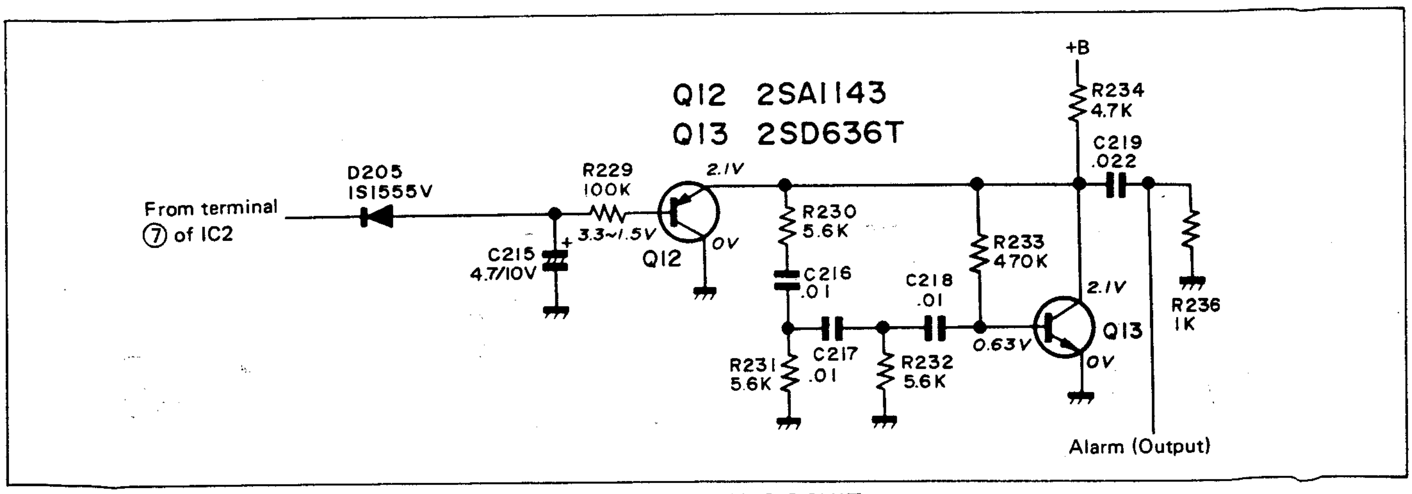


Figure 15-2 ALARM CIRCUIT

MECHANICAL ADJUSTMENT

Checking of Tape/Radio Selector Switch Performance

1. When the cassette tape is ejected, check that this switch is put off.
2. When a dummy cassette is loaded, check that this switch can turn on.

At the time push the dummy cassette slowly to enable PLAY mode, and see that the subchassis can't move down unless the cassette goes beyond the lock pin position (shown in the figure).

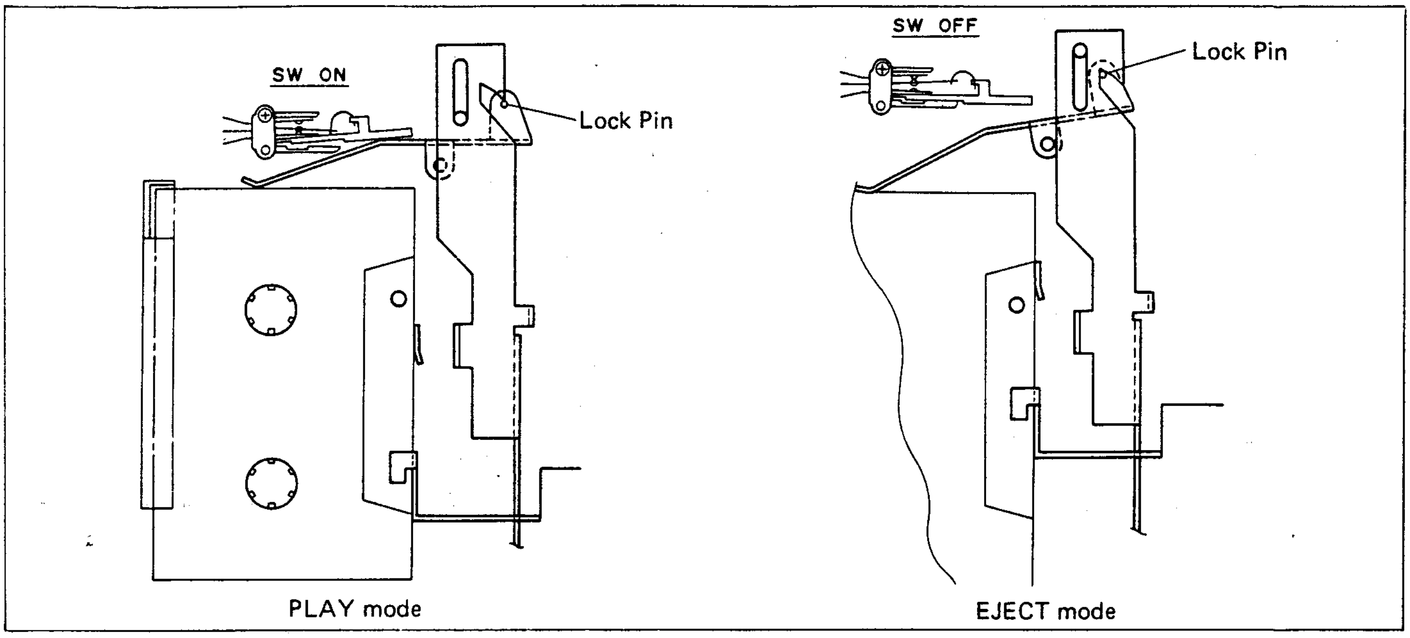


Figure 16-1

Flywheel Thrust Clearance Adjustment

1. When the flywheel is set in place, check if its thrust clearance is within 1.0 mm to 0.4 mm. If hot, correct it by bending the flywheel's bracket.

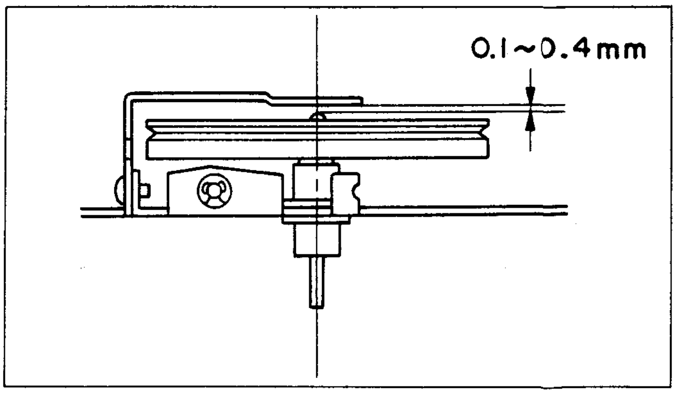


Figure 16-2

Checking of Motor ON/OFF Switch Performance

1. When the cassette tape is ejected, this switch should be off; when the cassette tape is played, it should be on. And in both EJECT and PLAY modes, the clearances shown in the figure should be as specified.

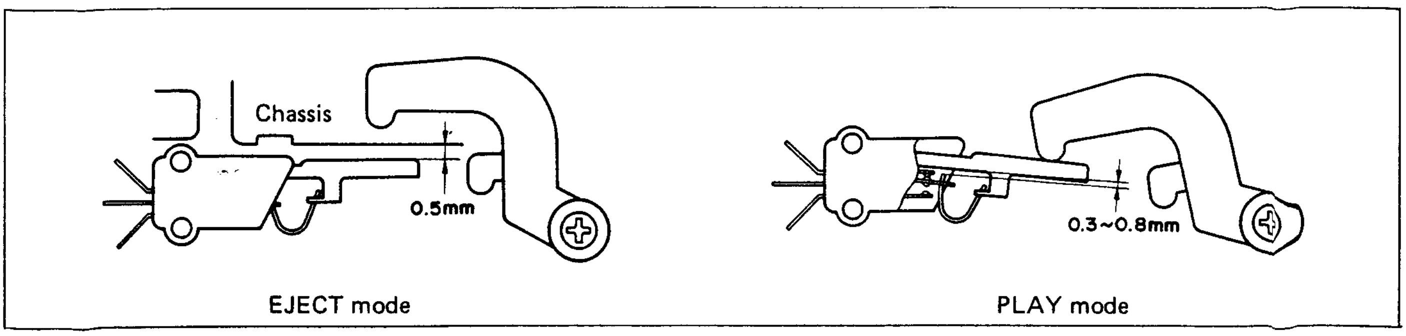
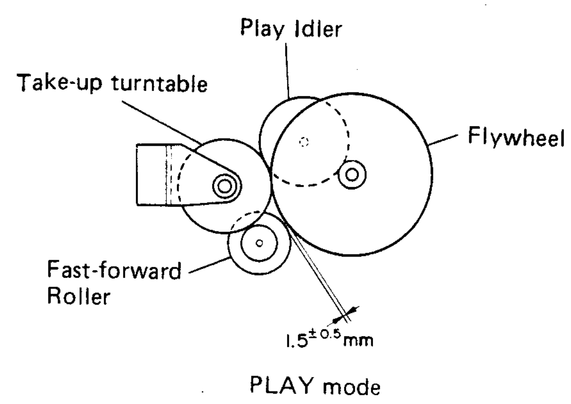


Figure 16-3

Clearance Checking

1. Under PLAY mode, check that the flywheel and fast forward roller move properly to produce a specified clearance between them.
2. Under FF mode, check that the take-up turntable and play idler move properly to create a specified clearance between them. Also check for the clearance between the fast forward roller lever and operation lever.



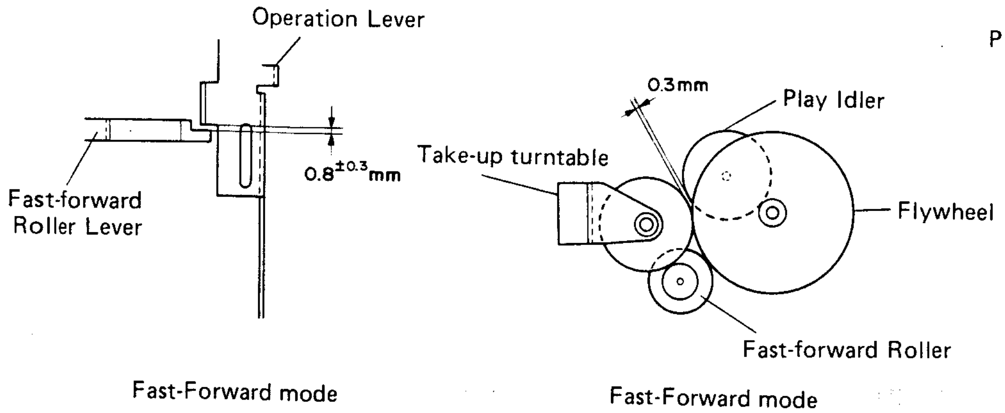


Figure 17-1

Checking of Auto Stop Operation

1. The sensor lever should be able to move in either direction as shown in the figure.

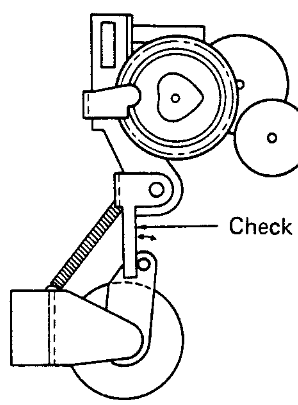
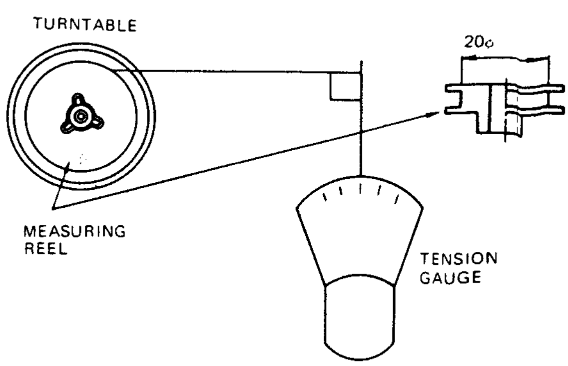


Figure 17-2

TORQUE CHECK

1. Set the torque measuring reel to the turntable (the take-up side at play or fast forward mode).
2. Then, rotate the reel in the same direction as for turntable and read the torque value when the pointer is stabilized.

Mode	Torque value
Play	35 – 55 gr.cm
Fast Forward	75 – 110 gr.cm



Checking of Tape Speed

1. Connect a frequency counter to the speaker terminal.
2. Using a test tape (MTT-111, 3 kHz), play it for 10 seconds at its beginning and end parts.
3. Check, then, that the playback frequency indicated by the counter is 2910 to 3090 Hz at maximum. If not, renew the motor.

   Note:

   The supply voltage is set at DC14V, and the unit must be kept horizontal during the measurement.

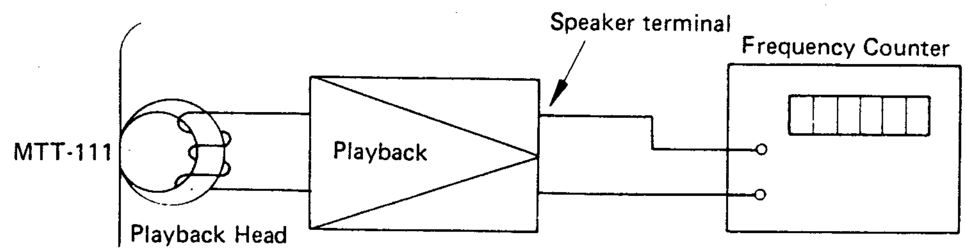


Figure 18-1

HEAD AZIMUTH ADJUSTMENT

Standard Test Tape to be applied: Philips HU-71512 or the equivalent (TEAC MTT-113, VICTOR VTT-601).

(1) Set the Player Unit on.

(2) Turn the azimuth adjusting screw until the output of the test tape (6.3kHz) is boosted up to the maximum.

Caution: After completion of the adjustment, be sure to lock the adjusting screw in place, using glyptal or glue.

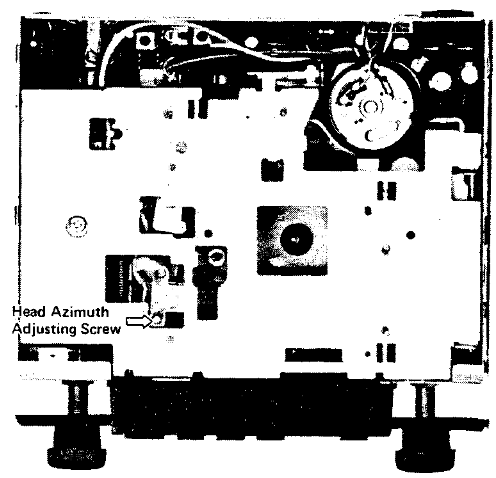


Figure 18-2

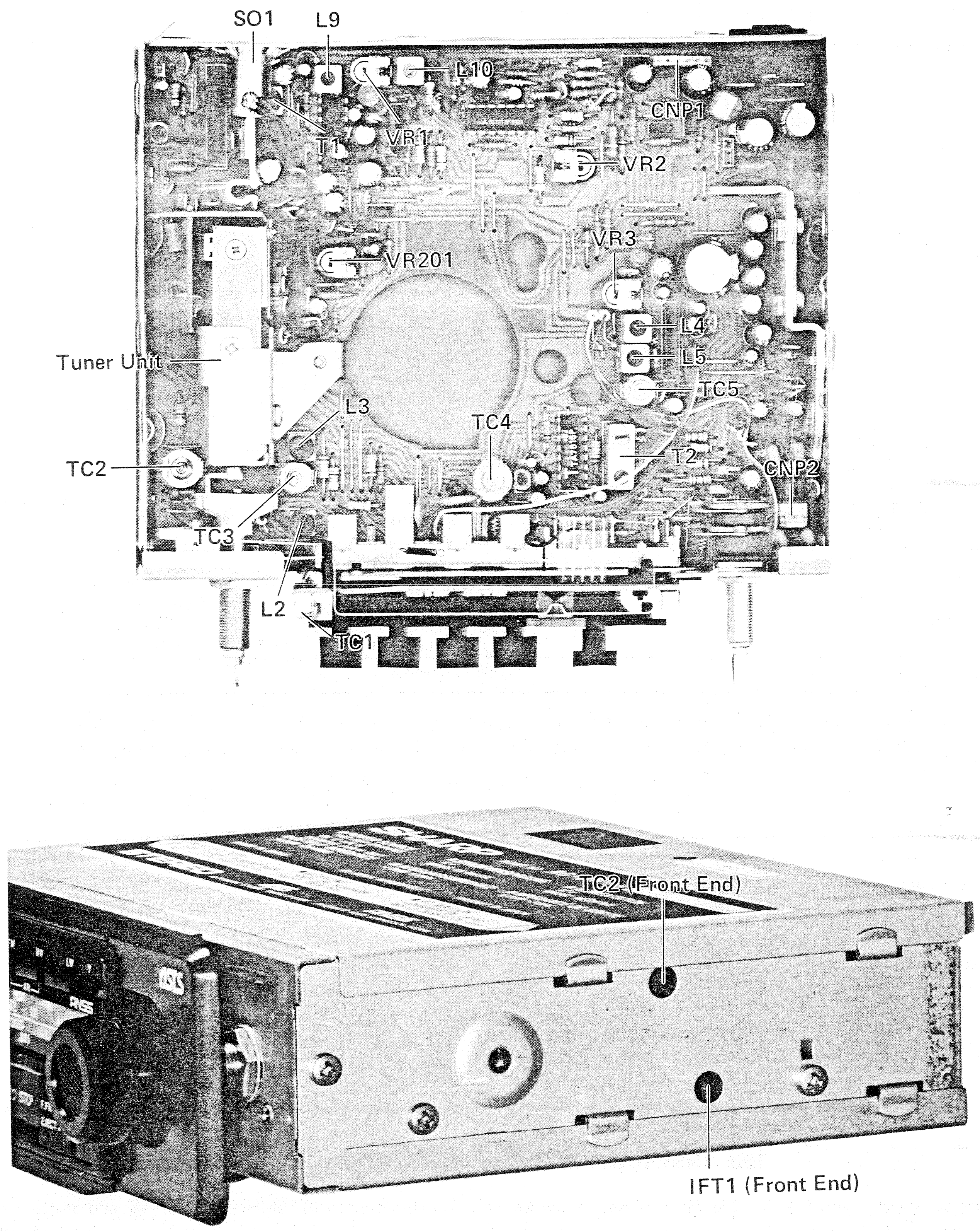


Figure 19 ALIGNMENT POINT

GENERAL ALIGNMENT INSTRUCTIONS

Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

1) Connect an output meter across the speaker voice coil lugs.
2) Set the volume control at maximum.
3) Attenuate the signals from the generator enough to swing the most sensitive range of the output meter.
4) Use a non-metallic alignment tool.
5) Repeat adjustments to insure good results.

LW/MW ALIGNMENT CHART

Set the band selector switch at "MW" or "LW" position.

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	MW	IF	Connect signal generator through a dummy to the antenna socket (SO1) Ground lead to the receiver chassis. (Refer to Figure 20)	Exactly 452kHz (400Hz, 30%, AM modulated)	High end of dial (minimum inductance)	Adjust for maximum output on speaker voice coil lugs.	T2
2	MW	IF	Repeat until no further improvement can be made.				
3	MW	Band Coverage	Same as step 1.	Exactly 510kHz (400Hz, 30%, AM modulated)	Low end of dial (maximum inductance)	Same as step 1.	Adjust the MW oscillator coil L5.
			Same as step 1.	Exactly 1650kHz (400Hz, 30%, AM modulated)	High end of dial (minimum inductance)	Same as step 1.	Adjust the MW oscillator trimmer TC5.
4	MW	Tracking	Same as step 1.	Exactly 1400kHz (400Hz, 30% AM modulated)	1400kHz.	Same as step 1.	Adjust the MW antenna trimmer TC1, and then adjust the MW RF trimmer TC3.
5	MW		Repeat steps 3 and 4 until no further improvement can be made.				
6	LW	Band Coverage	Same as step 1.	Exactly 145kHz (400Hz, 30%, AM modulated)	Low end of dial (maximum inductance)	Same as step 1.	Adjust the LW oscillator trimmer TC4
			Same as step 1.	Exactly 310kHz (400Hz, 30%, AM modulated	High end of dial (minimum inductance)	Same as step 1.	Adjust the LW oscillator coil L4.
7	LW	Tracking	Same as step 1.	Exactly 160kHz (400Hz, 30%, AM modulated)	160kHz	Same as step 1.	Adjust the LW antenna trimmer TC2.
			Same as step 1.	Exactly 260kHz (400Hz, 30%, AM modulated)	260kHz.	Same as step 1.	Adjust the LW antenna coil L2, and then adjust the LW RF coil L3.
8	LW		Repeat steps 6 and 7 until no further improvement can be made.				

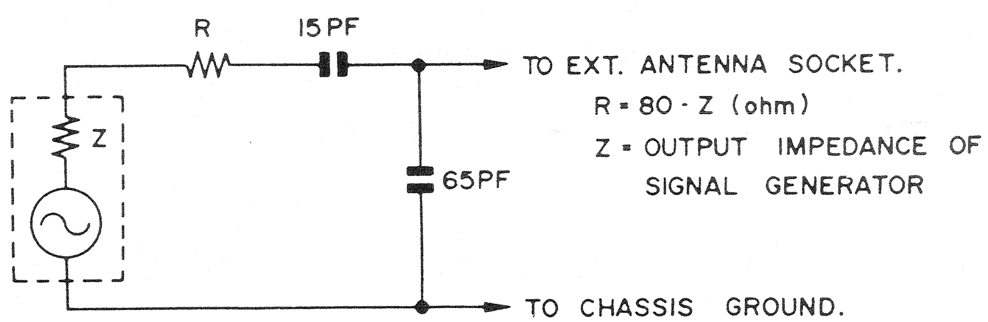


Figure 20 AM DUMMY

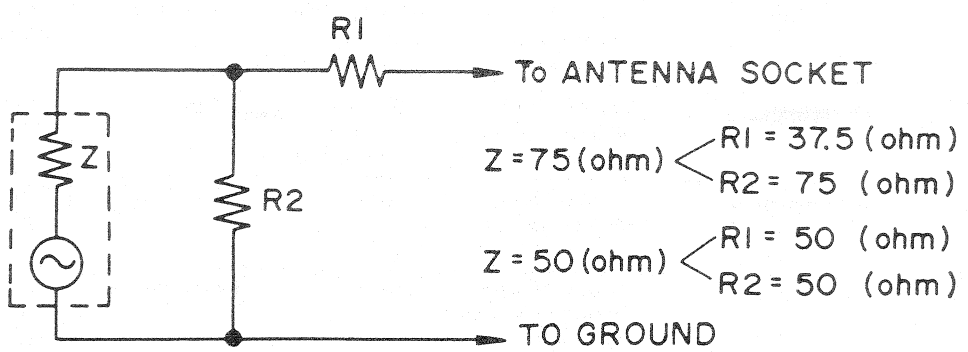
FM ALIGNMENT CHART

Set the band selector switch at "FM" position.

STEP	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
		CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	IF (NOTE B)	Connect signal generator through a .022MFD capacitor to antenna socket (SO1). Connect generator ground lead to the receiver chassis.	Exactly 10.7MHz (400Hz, 30%, FM modulated)	Low end of dial. (maximum inductance)	Connect VTVM between test point TP1 and chassis ground.	Tune IFT 1 (Front End)
2	Quar-drature Detector	Same as step 1.	Exactly 10.7MHz (unmodulated)	Same as step 1.	See NOTE A.	See NOTE A.
3	Repeat steps 1 until no further improvement can be made.					
4	Band Coverage	Connect signal generator through a dummy including output impedance of signal generator to the car antenna socket (SO1). Ground lead of generator connected to the receiver chassis. (Refer to Figure 26)	Exactly 87.2 MHz (400Hz, 30%, FM modulated)	Same as step 1.	Adjust for maximum output at speaker voice coil.	Oscillator trimmer TC2

NOTE A

1) Connect VTVM (10 volt range D.C. Scale between test point TP2 and Pin 13 of IC-1.
2) Adjust T1 for 0 volt on VTVM.



Z=OUTPUT IMPEDANCE OF SIGNAL GENERATOR

Figure 21 FM DUMMY

NOTE B

Five kinds of ceramic filter (CF1, CF2) are available for this set. The difference of central frequency from each other can be known by the color indication. The table below shows such a difference of IF and S curve, depending upon the color indications of the ceramic filter (CF1, CF2).

Central Frequency	D	Black	10.64MHz ± 30kHz
	B	Blue	10.67MHz ± 30kHz
	A	Red	10.70MHz ± 30kHz
	C	Orange	10.73MHz ± 30kHz
	E	White	10.76MHz ± 30kHz

For their employment, it is required to use two ceramic filters of same type.

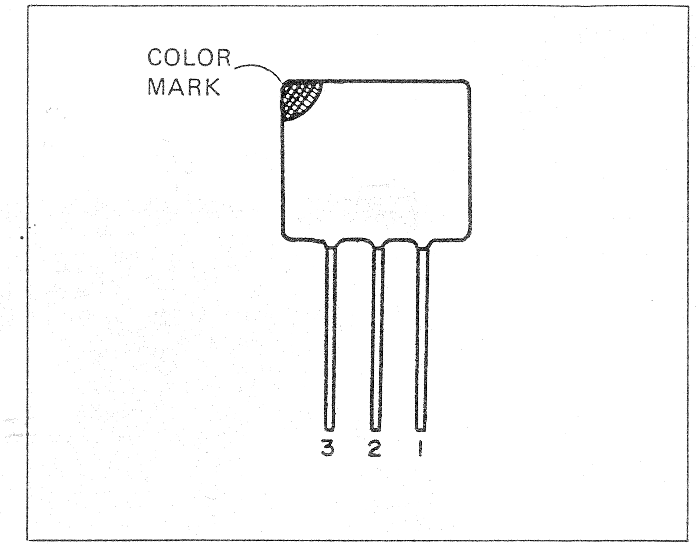


Figure 22-1

FM STEREO ALIGNMENT

Set the band selector switch at "FM" position.

STEP	SIGNAL GENERATOR		RECEIVER		METER CONNECTION	ADJUSTMENT
	CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS		
1			98MHz	Adjust so that the frequency becomes 19.0kHz. (In case an oscilloscope is connected to the test point TP8, adjust the signals to be 19kHz by using Lissajou's wave-form).	Connect the frequency counter (or oscilloscope) through a 100K ohm resistor to TP8 (3 pin of IC4).	VR3

If without the frequency counter, proceed with the alignment as follows. While receiving a FM stereo signal, turn the VR3 until the P.L.L. will be locked (when it is locked, the stereo indicator will be lit). Then, reversely turn the VR3 halfway and fix it.

ANSS ADJUSTMENT

1. Set the band selector switch at "FM" position.
2. Apply a 19 kHz signal of 30 mV to (TP5).
3. Connect a VTVM and/or an oscilloscope to (TP7).
4. Adjust L10 for minimum output at (TP5).
5. Then, apply a 1 kHz signal of 100 mV to (TP5).
6. Make sure that there is no output at pin 6, applying a 100 kHz signal of 50 mV further to pin 13.
7. Next, make sure that a 1 kHz signal of 100 mV appears at (TP5), connecting (TP-6) to earthe.

THE INSTRUCTION OF FREQUENCY ADJUSTMENT

In order to comply with Pfg. Nr. 358/1970, please fix the low end of dial frequency (87.5MHz) and the high end of dial frequency (107.9MHz) on FM band, by adjusting oscillation trimmer (TC2) Front End. and oscillation coil (L4), respectively, as illustrated in Figure 19.

ARI ADJUSTMENT (RG-5900H Only)

Set the band selector switch at "ARI" position.

1. 57kHz VCO Adjustment

RECEIVER		METER CONNECTION	ADJUSTMENT
DIAL SETTING	REMARKS		
	Adjust so that the frequency becomes 57.0kHz. (In case an oscilloscope is connected to the test point TP-3, adjust the signals to be 57kHz by using Lissajour's wave-form.)	Connect the frequency counter (or oscilloscope) through a 10K ohm resistor TP-3. (12 pin of IC-2)	VR1

2. 57kHz Level Adjustment

- Signal generator in use: CR oscillator or ARI SSG (Standard signal generator)
- Meter in use: Level meter or oscilloscope
- Connection to receiver:

a. Apply a signal of 57 kHz, 5 mV from the CR oscillator or ARI SSG, across a capacitor of 4.7 μF, between the test point TP-2' (pin 2 of IC2) and earth.

b. Connect the level meter or oscilloscope between the test point TP-4 (pin 13 of IC2) and earth.

- Adjustment:

Rotate the coil L9 so that the level meter or the oscilloscope swings the most

3. 125Hz Level Adjustment

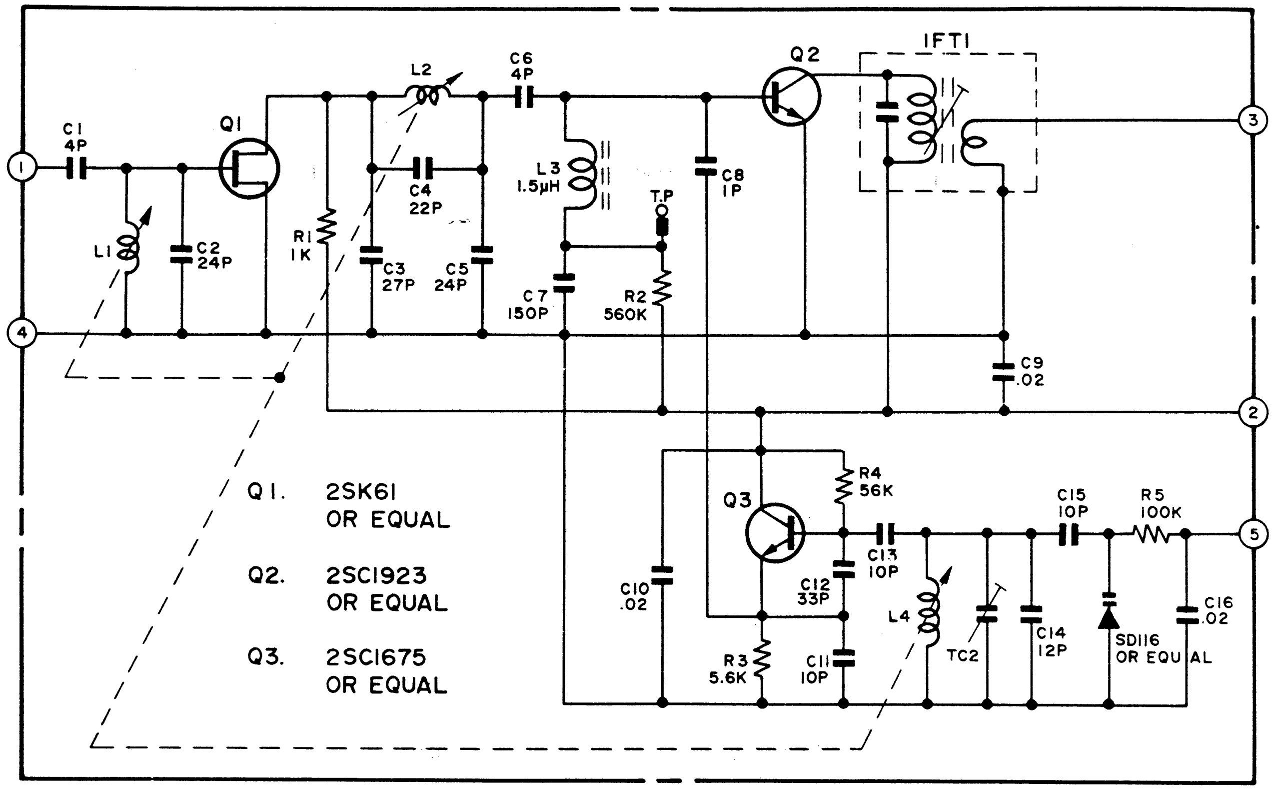
- Signal generator in use: CR oscillator or ARI SSG
- Meter in use: Level meter or oscilloscope
- Connection to receiver:

a. Apply a signal of 125 Hz, 5 mV from the CR oscillator or ARI SSG, between the test point TP-9 and earth.

b. Connect the level meter or oscilloscope between the test point TP-10 and earth.

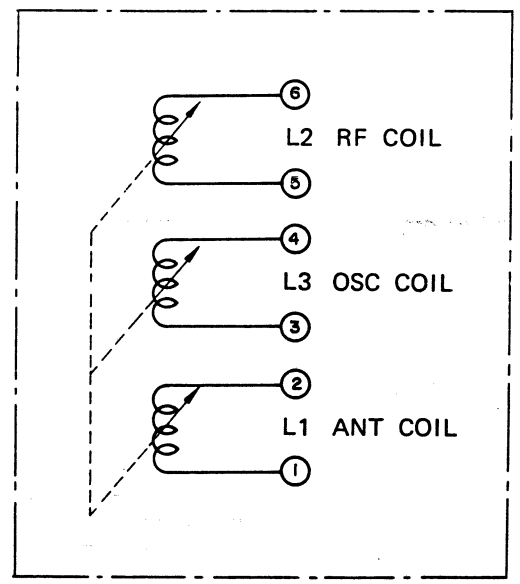
- Adjustment:

Rotate the semi-variable resistor VR201 so that the level meter or oscilloscope swings the most



FM FRONT END

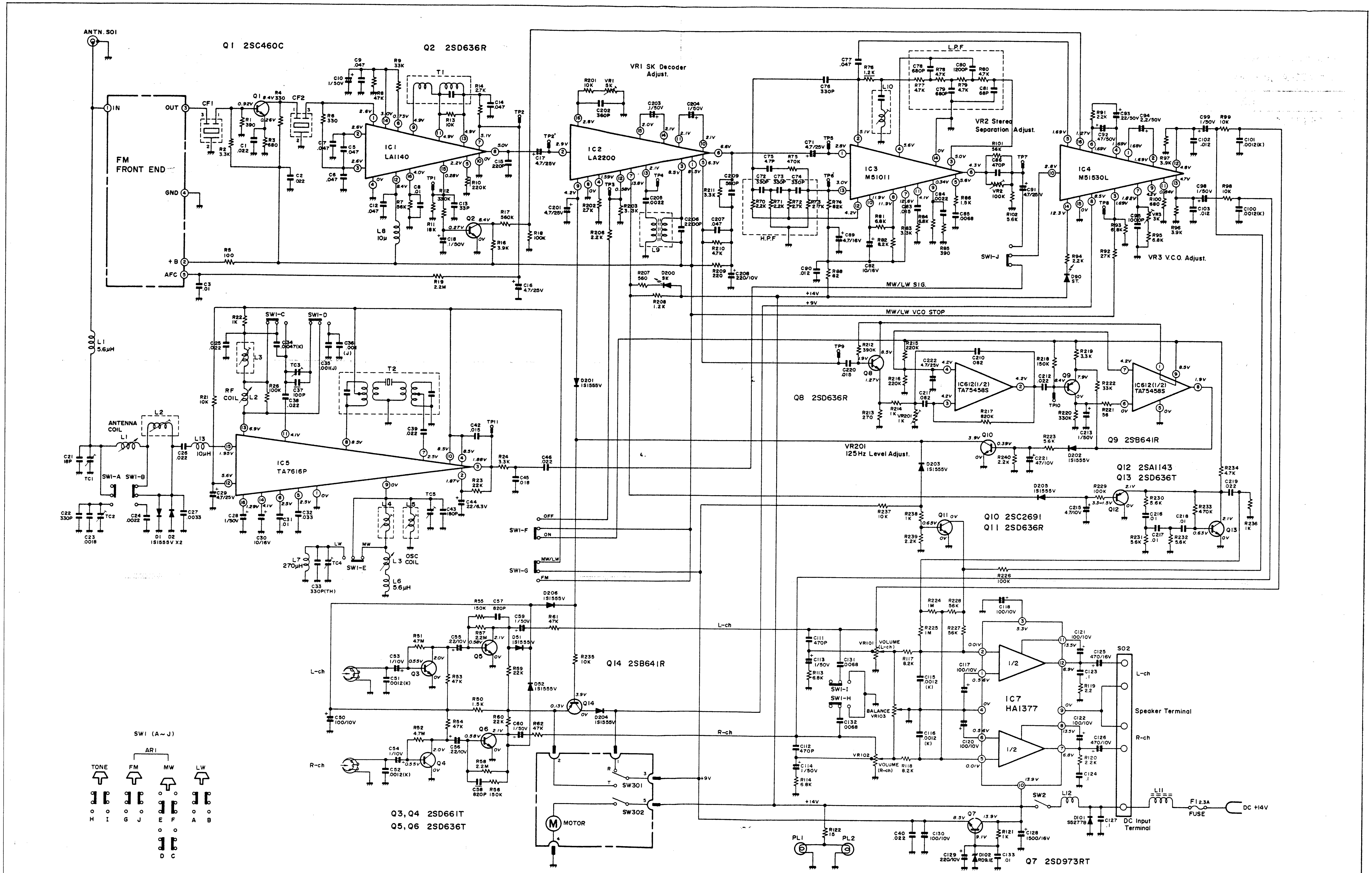
1 : ANT (75 ohm)
2 : B (8.2V)
3 : OUT (300 ohm)
4 : E
5 : AFC (4.4V)



AM BLOCK

NOTES ON SCHEMATIC DIAGRAM

SW1 (A ~ J): Band Selector Switch "MW" position.
SW2: Power Switch "off" position.
SW301: Tape/Radio Selector Switch "Radio" position.
SW302: Motor Switch "off" position.



(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 25 SCHEMATIC DIAGRAM (RG-5900H)

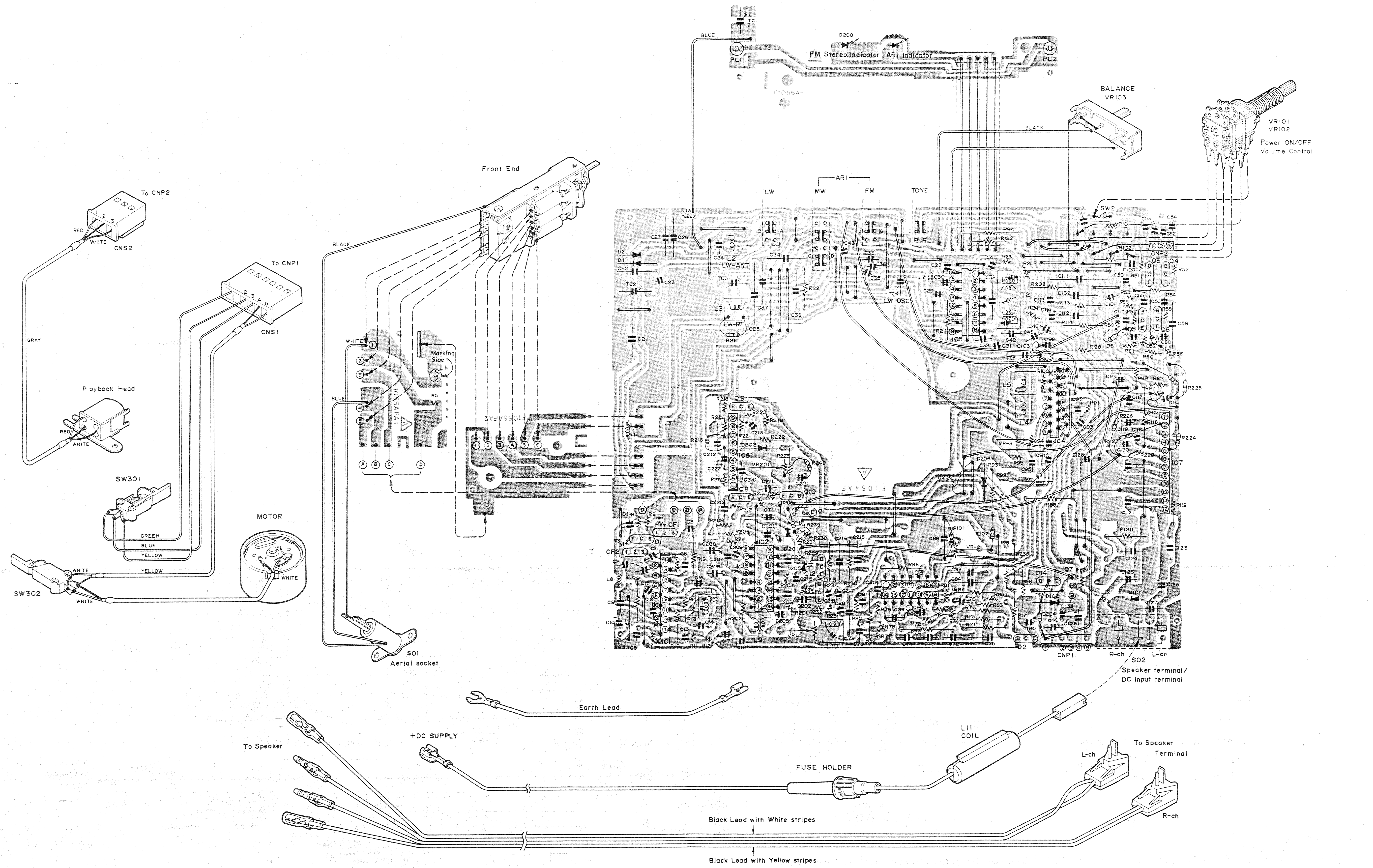
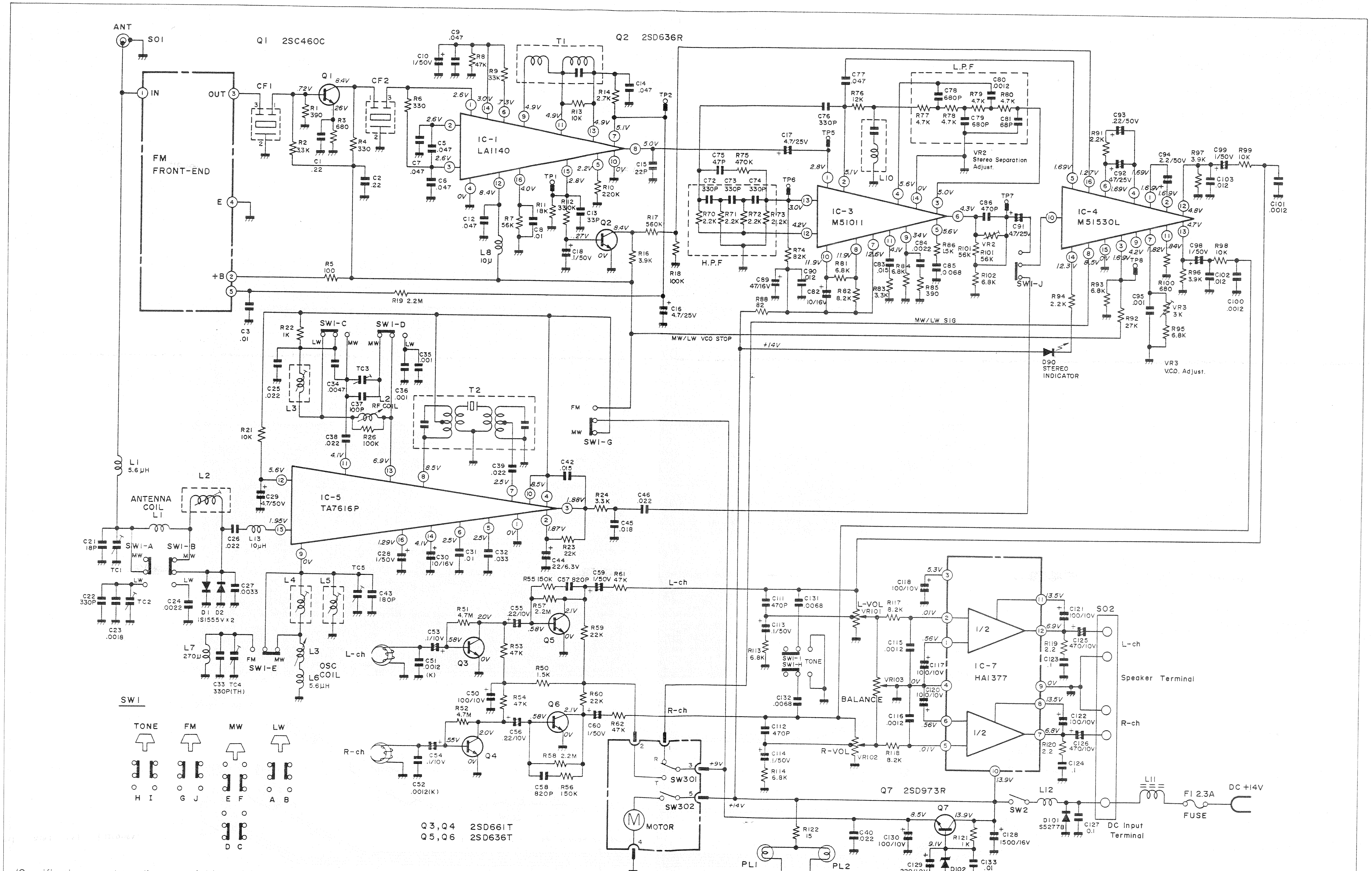


Figure 27 WIRING SIDE OF P.W. BOARD (RG-5900H)



(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 29 SCHEMATIC DIAGRAM (RG-5900E)

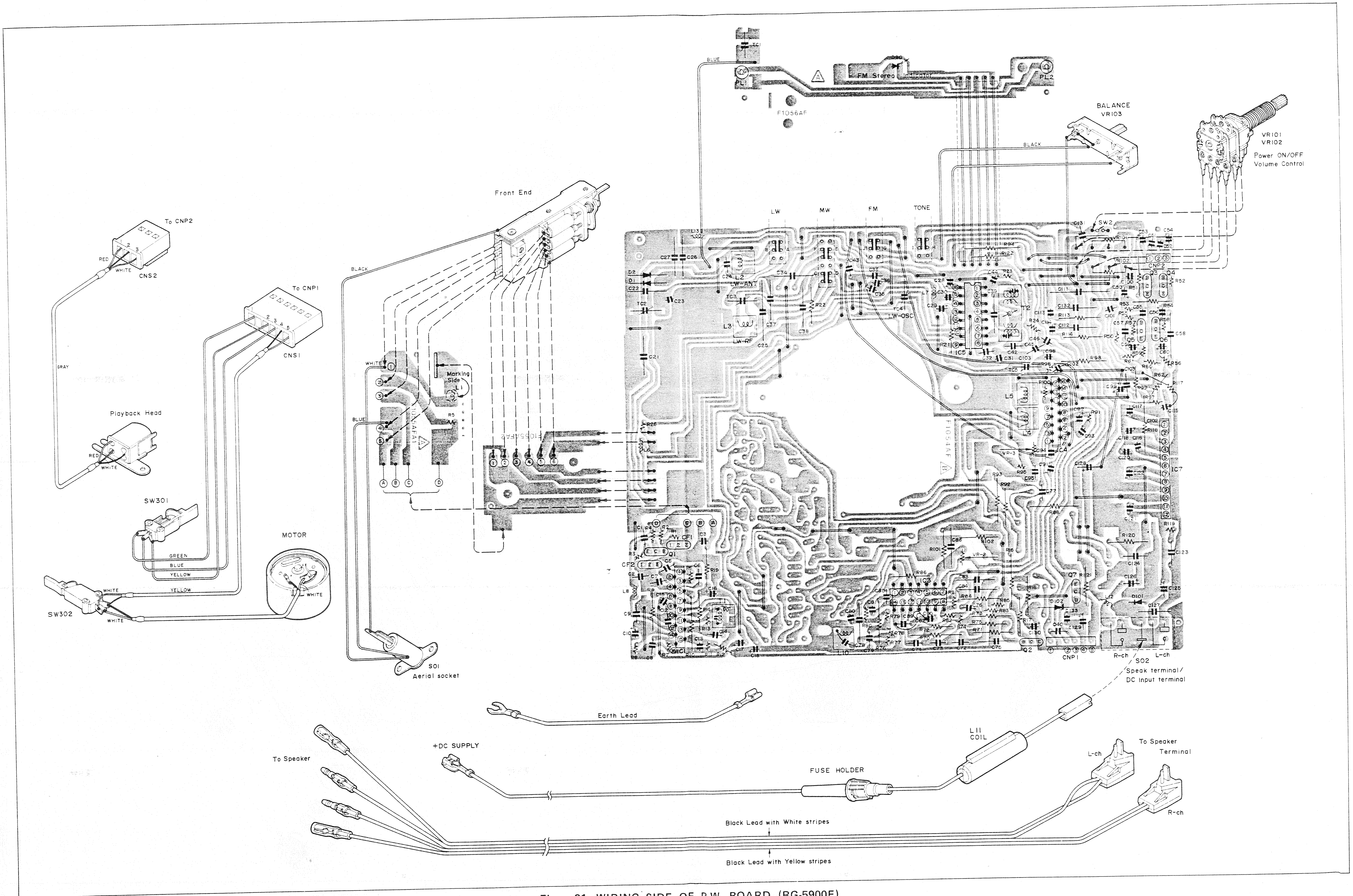


Figure 31 WIRING SIDE OF P.W. BOARD (RG-5900E)

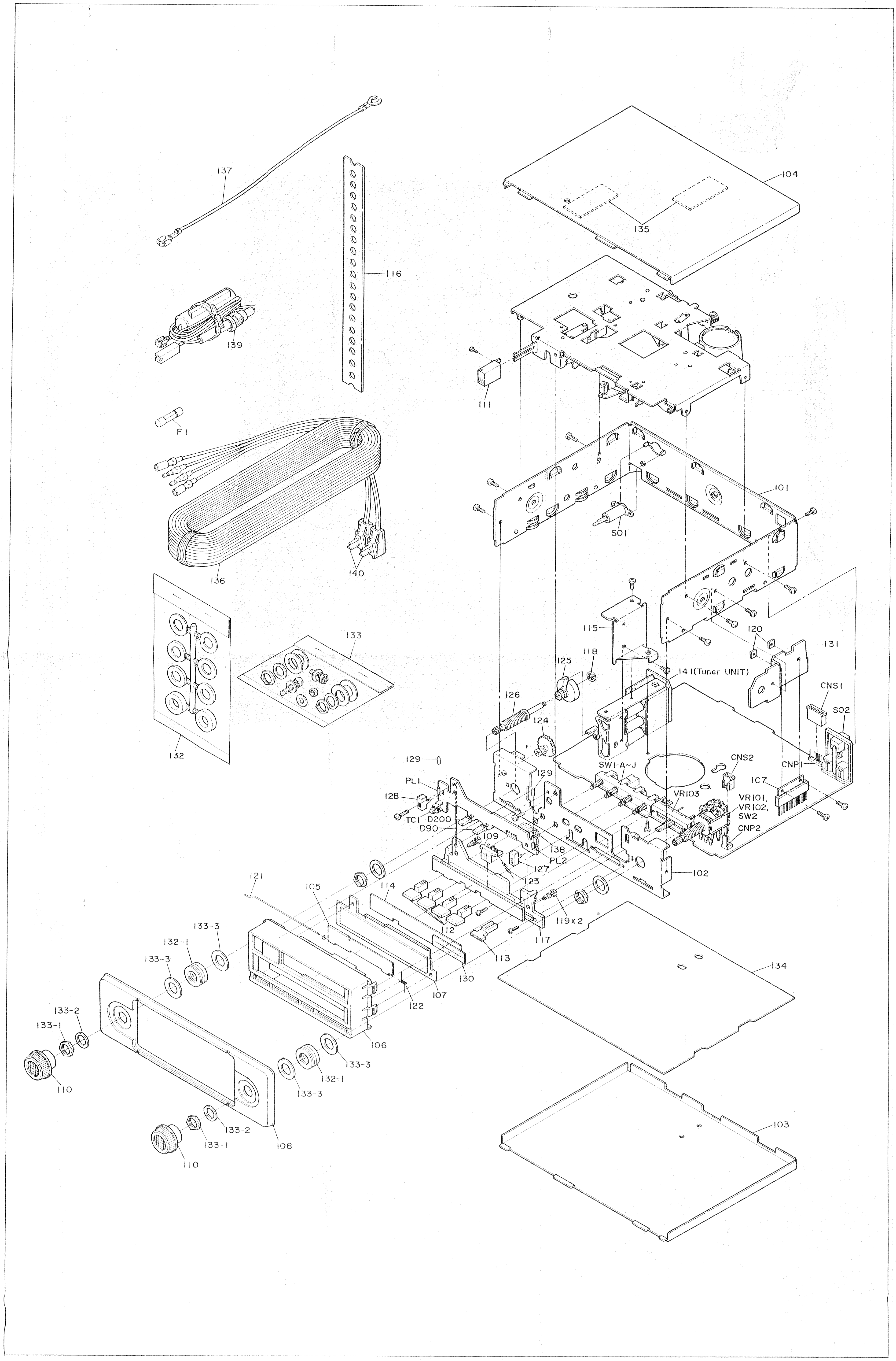


Figure 34 CABINET EXPLODED VIEW

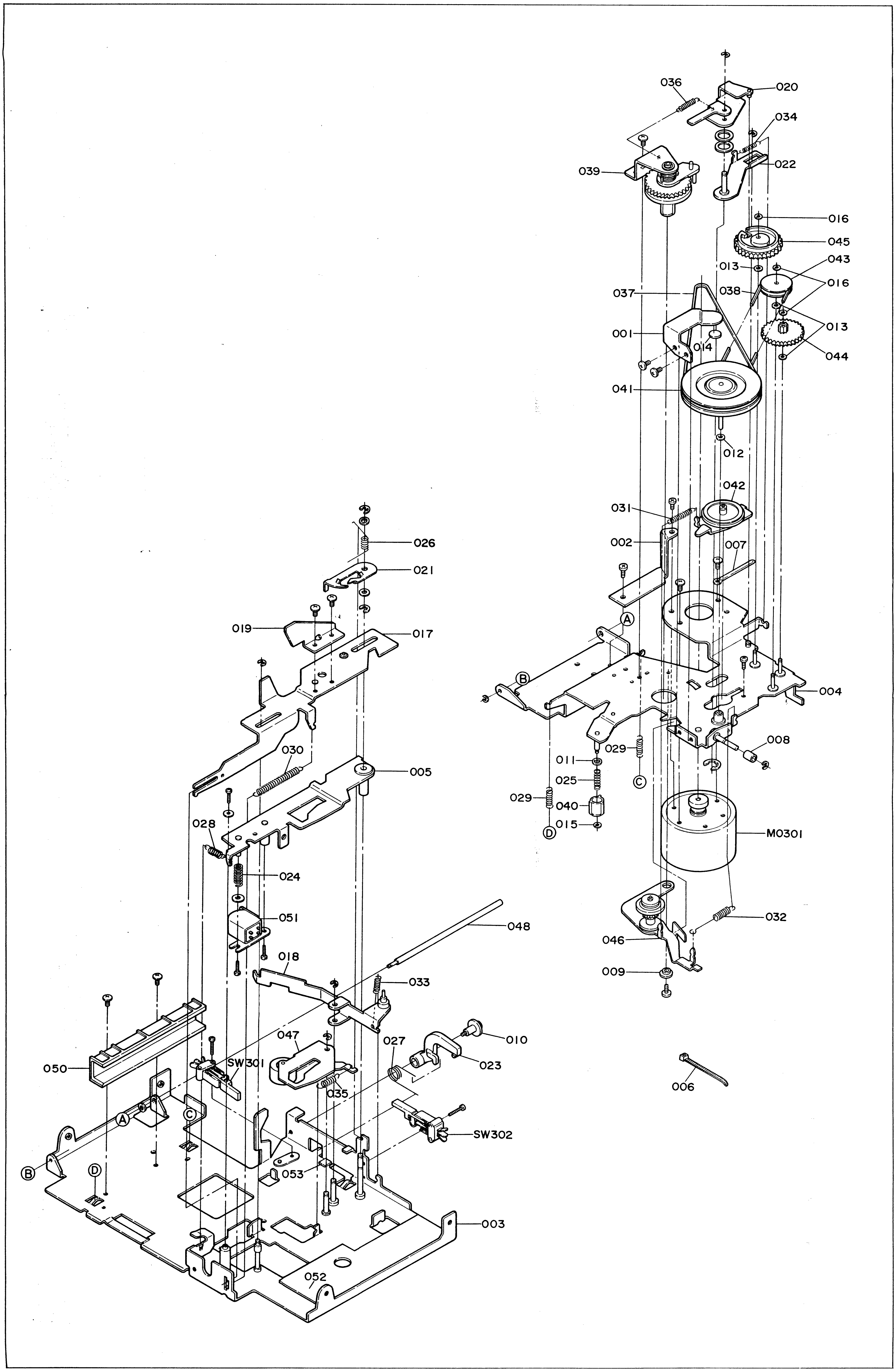


Figure 36 MECHANISM EXPLODED VIEW

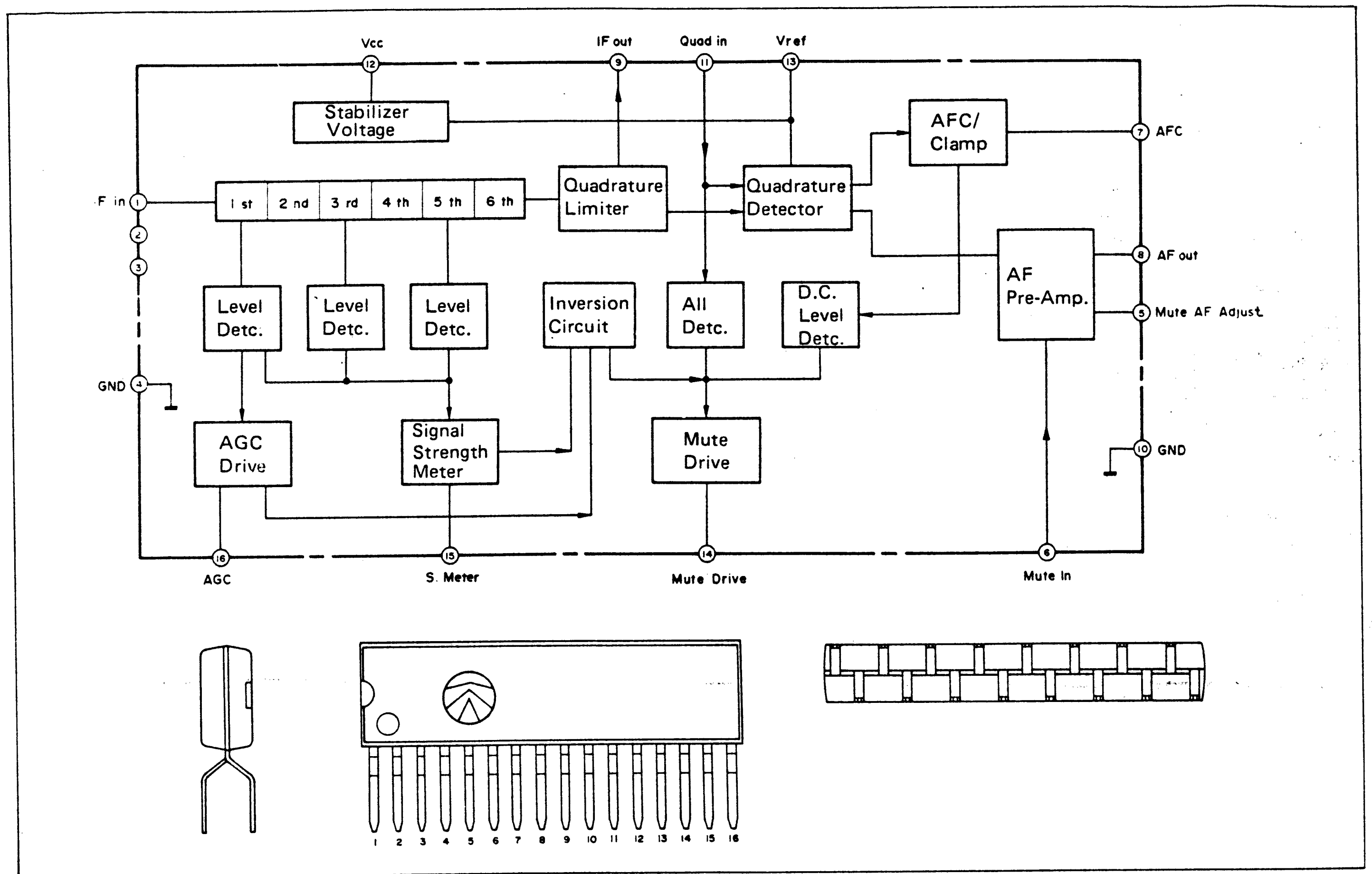


Figure 37-1 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUITS (IC1)

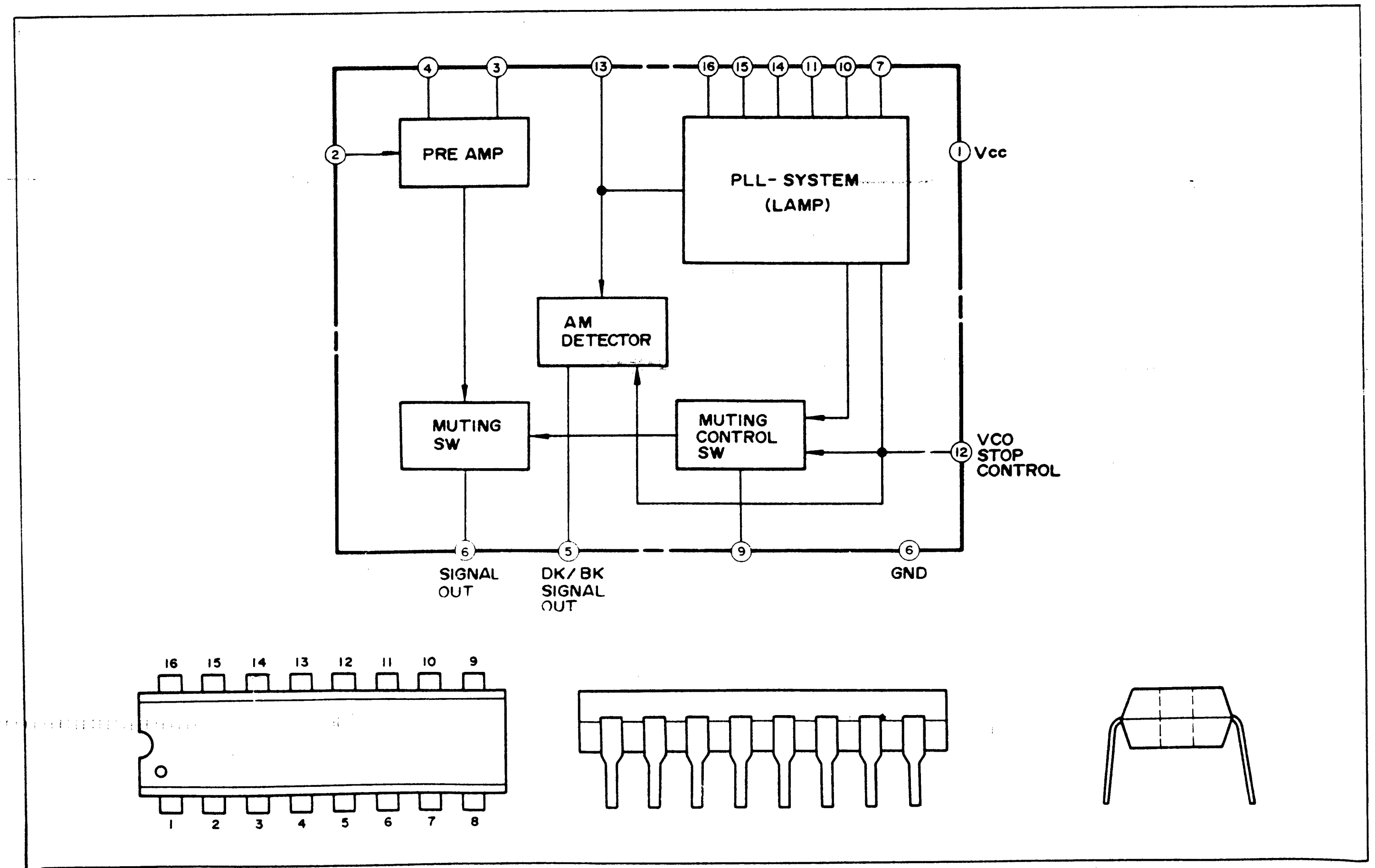


Figure 37-2 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUITS (IC2)

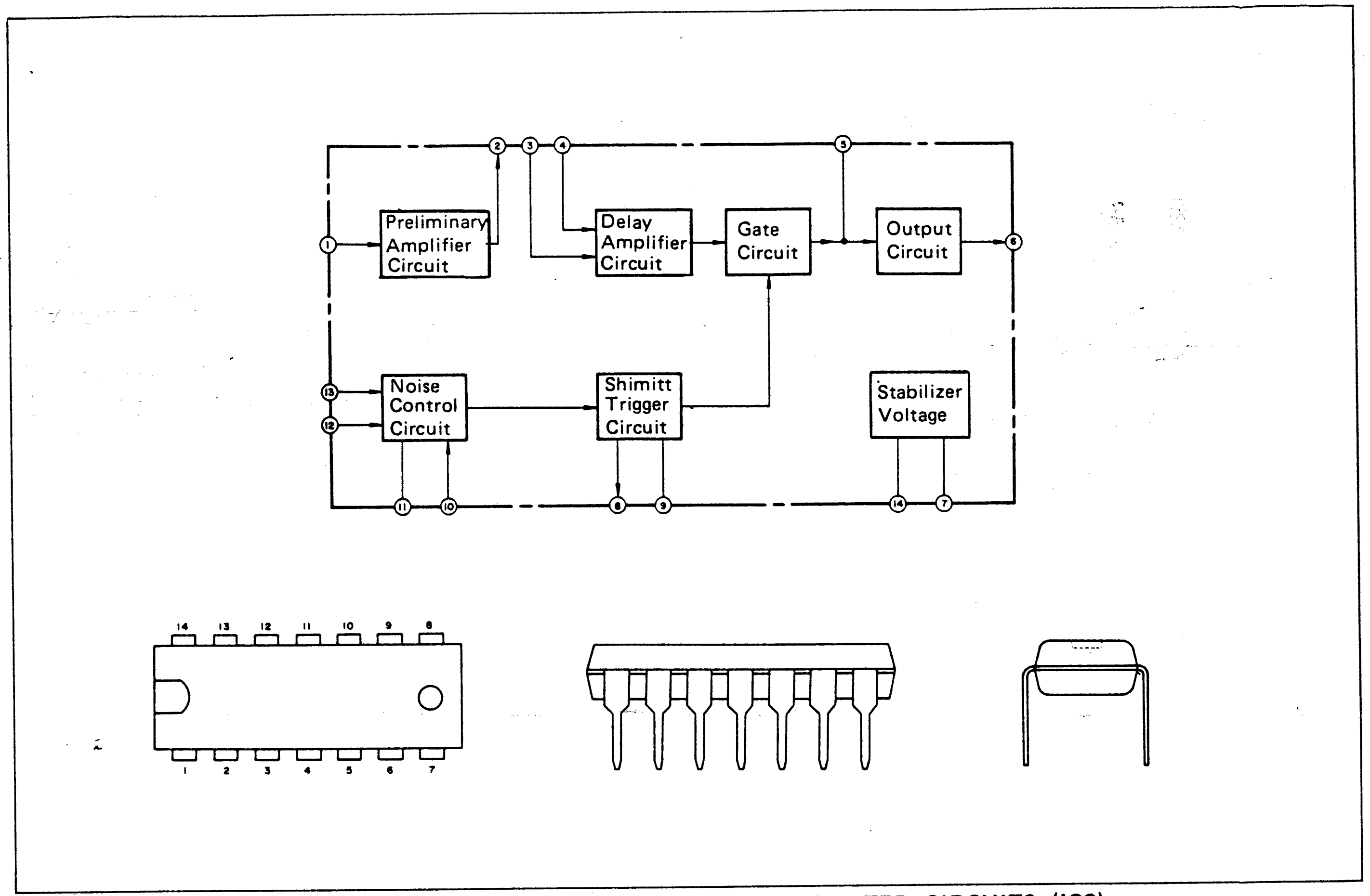


Figure 38-1 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUITS (IC3)

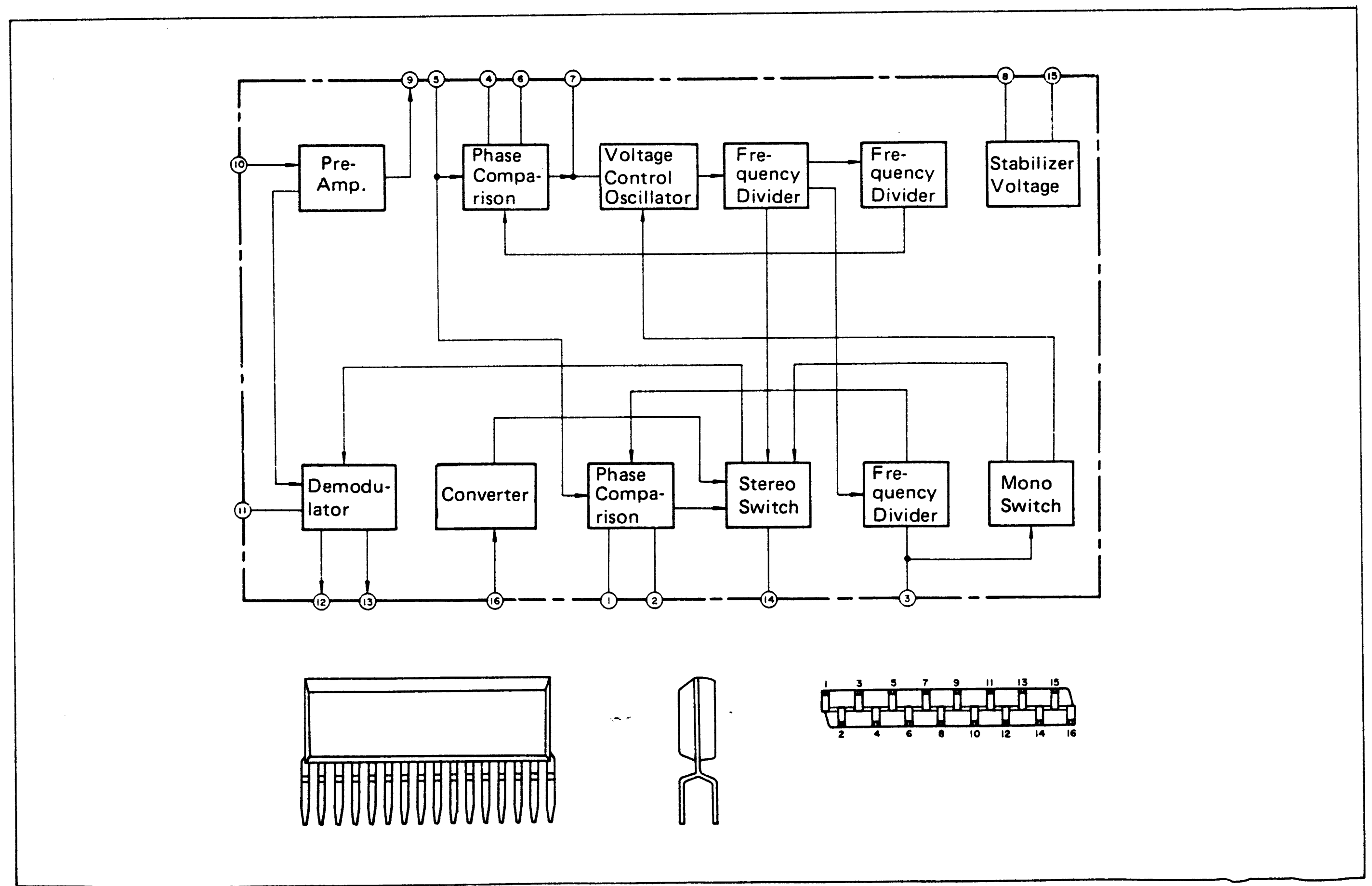


Figure 38-2 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUITS (IC4)

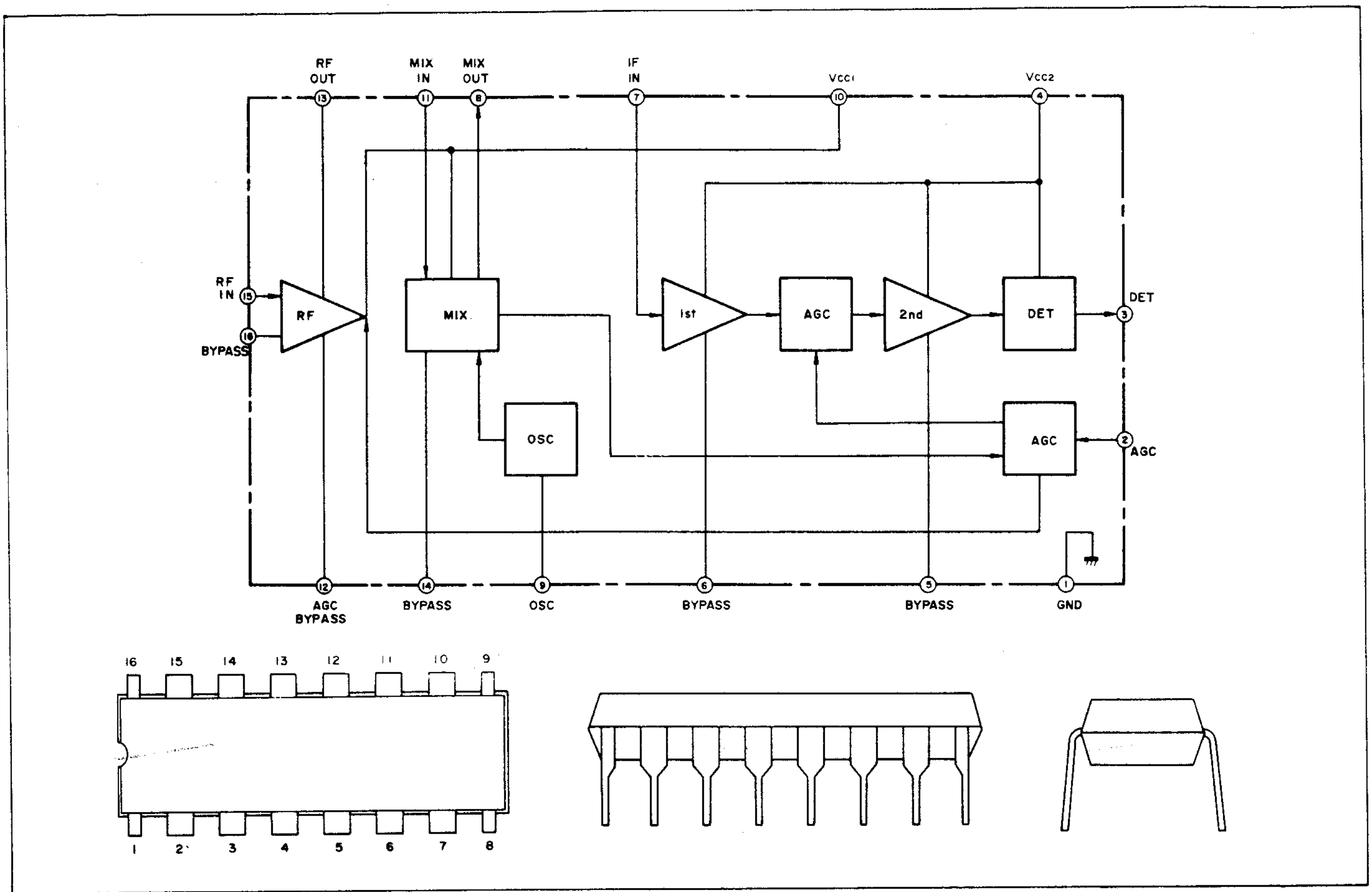


Figure 39-1 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUITS (IC5)

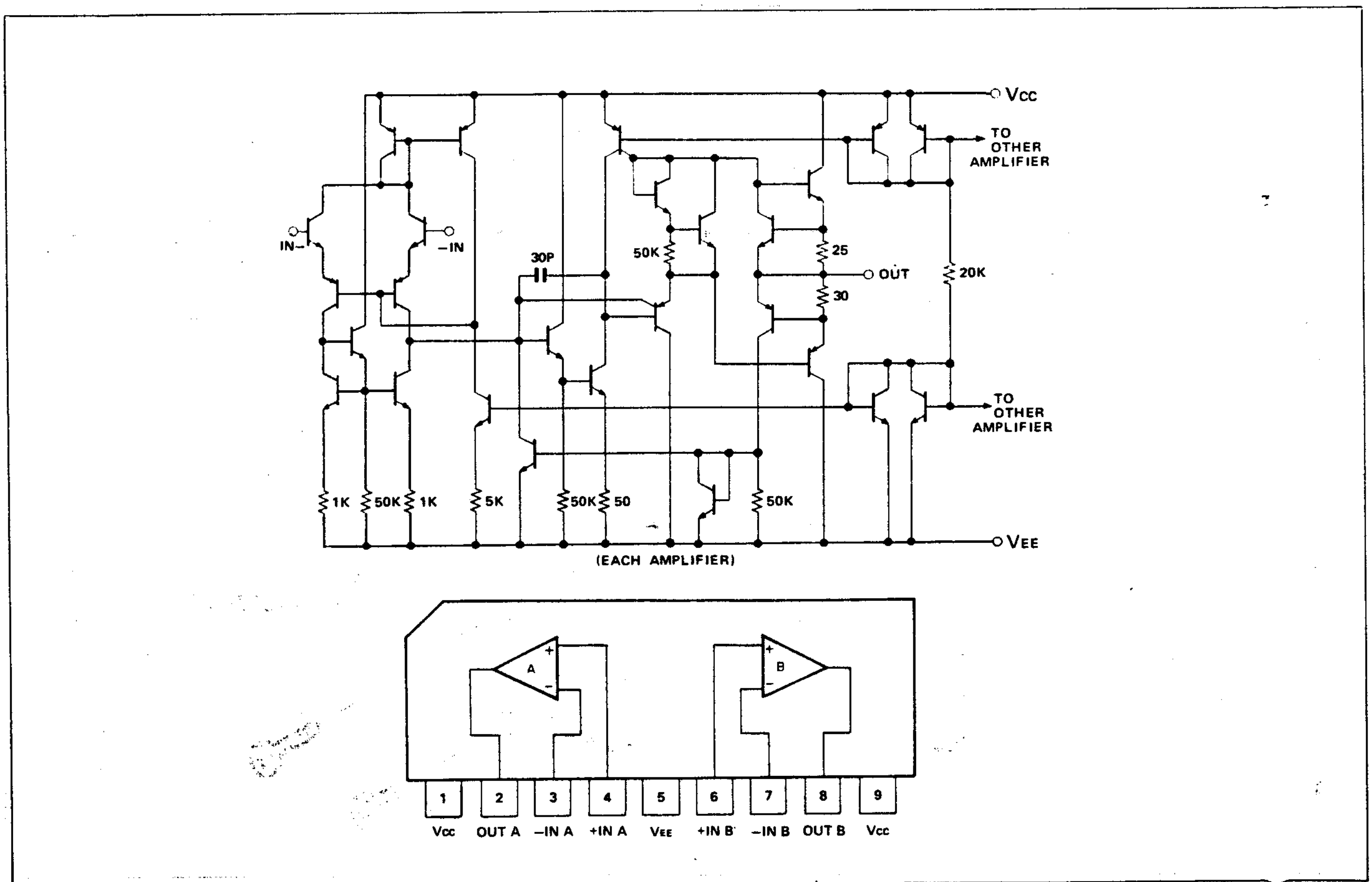


Figure 39-2 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUITS (IC6)

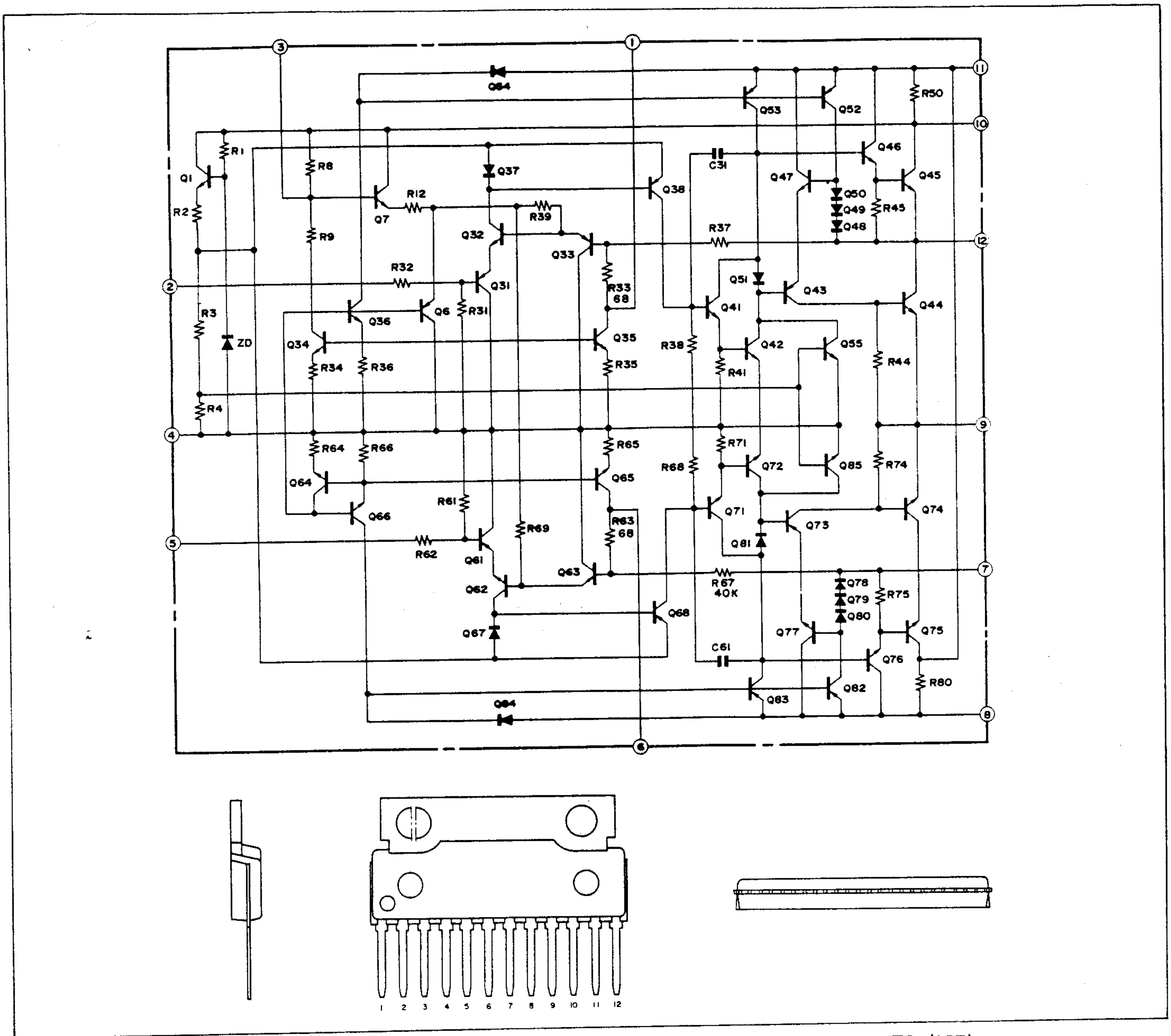


Figure 40-1 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUITS (IC7)

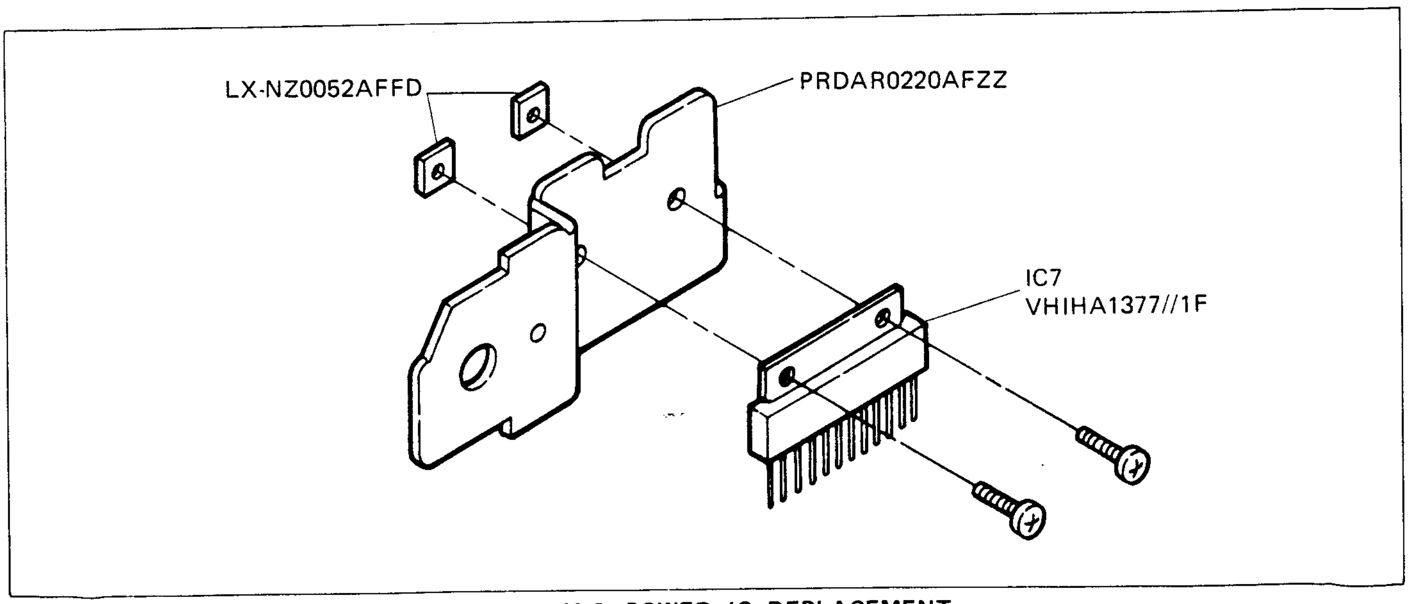


Figure 40-2 POWER IC REPLACEMENT

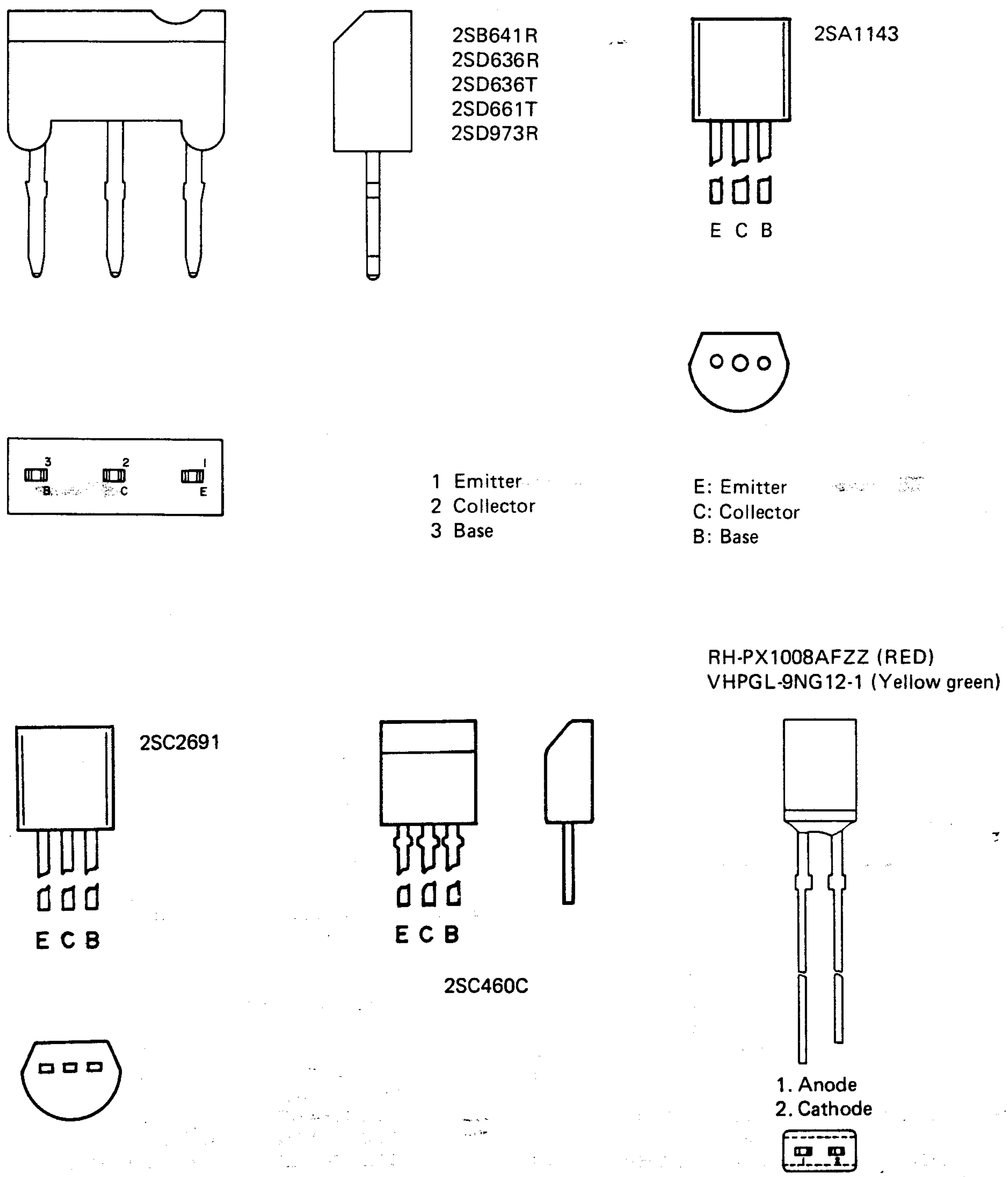


Figure 41 TRANSISTORS AND L.E.D.s TYPE

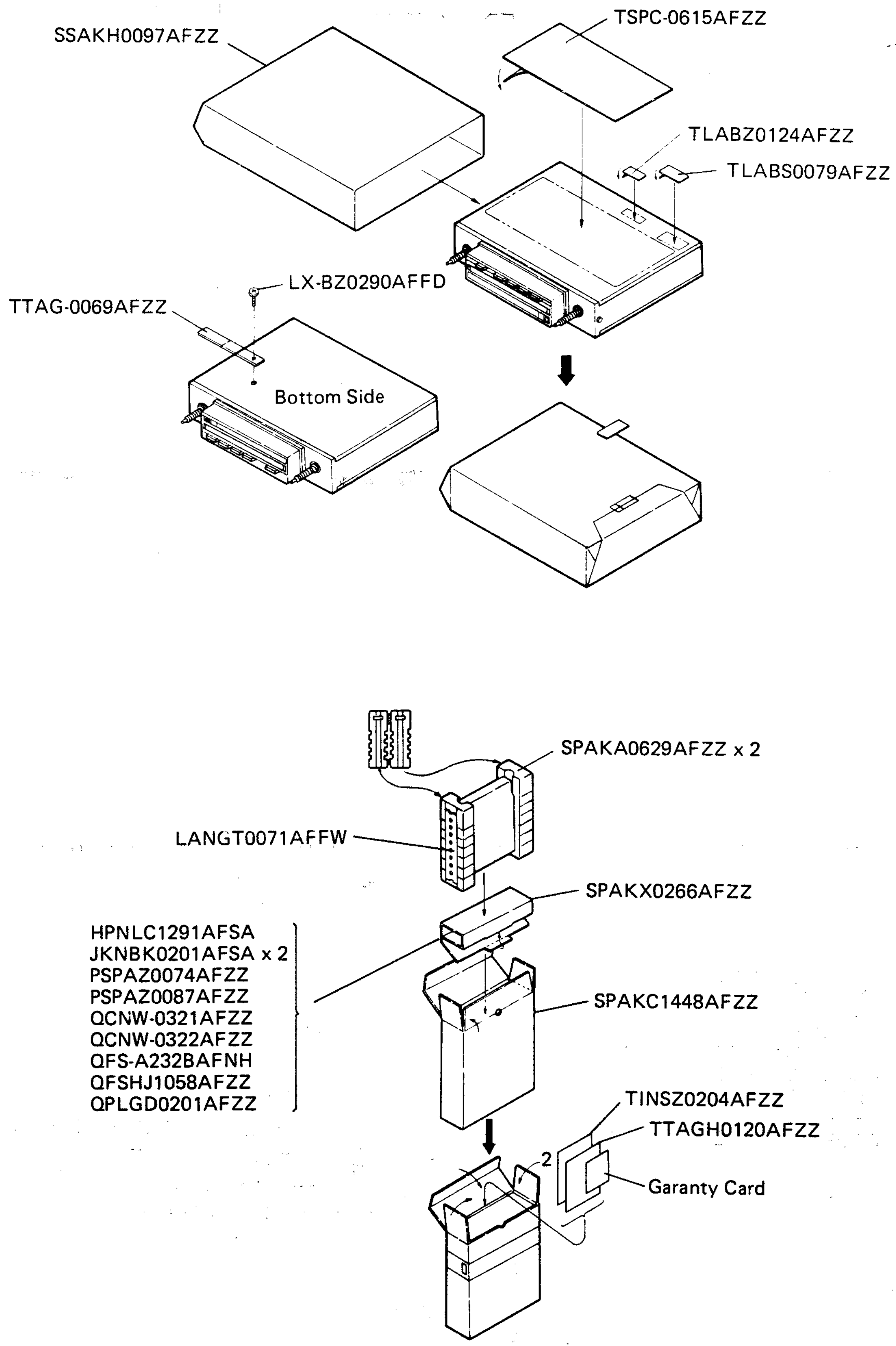


Figure 42 PACKING METHOD (RG-5900H)

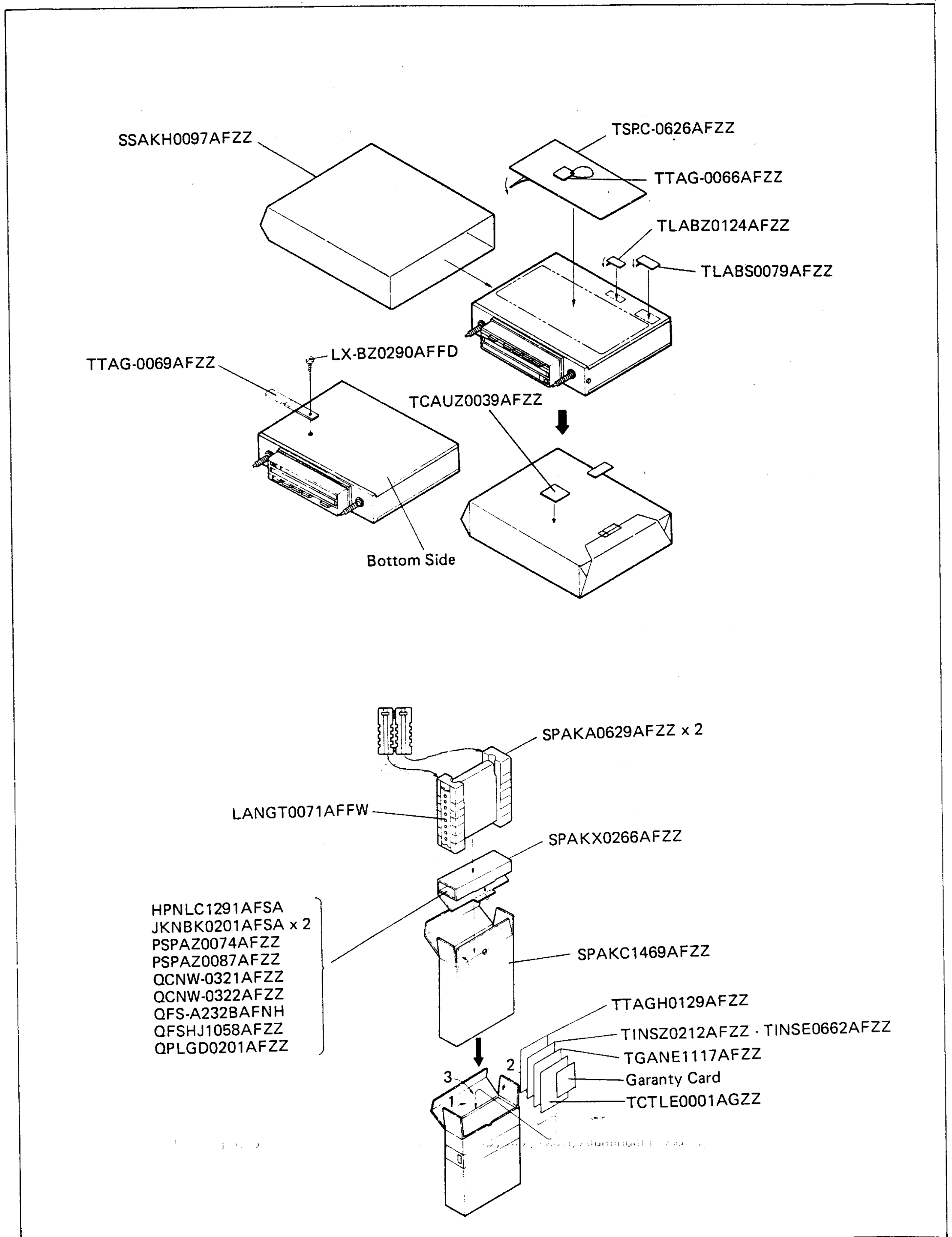


Figure 43 PACKING METHOD (RG-5900E)

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		INTEGRATED CIRCUITS	
IC1	VHILA1140//1F	FM IF Amp. (LA1140)	AK
IC2	VHILA22002A-1	ARI Circuit (LA22002A)	AL
IC3	VHIM51011//1F	ANSS Circuit (M51011)	AG
IC4	VHIM51530L/1F	FM M.P.X. (M51530L)	AK
IC5	VHITA7616P/1F	AM RF/OSC/IF Detector (TA7616P)	AK
IC6	RH-IX1132AFZZ	125Hz B.P.F. and Schmitt Circuit (TA75458S)	AG
IC7	VHIHA1377//1F	Power Amplifier (HA1137)	AR
		TRANSISTORS	
Q1	VS2SC460-C/-1	FM IF Amp. (2SC460C)	AC
Q2	VS2SD636-R/-1	Switching, Separation Control Signal (2SD636R)	AD
Q3	VS2SD661-T/-1	1st Pre-amplifier (2SD661T)	AB
Q4	VS2SD661-T/-1	1st Pre-amplifier (2SD661T)	AB
Q5	VS2SD636-T/-1	2nd Pre-amplifier (2SD636T)	AB
Q6	VS2SD636-T/-1	2nd Pre-amplifier (2SD636T)	AB
Q7	VS2SD973-R/-1	Voltage Regulator (2SD973R)	AC
Q8	VS2SD636-R/-1	Impedance Converter (2SD636R)	AD
Q9	VS2SB641-R/-1	Rectifier (2SB641R)	AB
Q10	VS2SC2691//-1	DK Switching (2SC2691)	AB
Q11	VS2SD636-R/-1	DK Switching	AD
Q12	VS2SA1143//-1	Alarm Circuit (2SA1143)	AB
Q13	VS2SD636-T/-1	Alarm Circuit (2SD636T)	AB
Q14	VS2SB641-R/-1	Switching (2SB641R)	AB
		DIODES	
D1, D2	VHD1S1555V/1G	Static Protector (1S1555V)	AB
D51	VHD1S1555V/1G	Muting Circuit (1S1555V)	AB
D52	VHD1S1555V/1G	Muting Circuit (1S1555V)	AB
D90	RH-PX1008AFZZ	FM Stereo Indicator (GL-9PR2) (Red)	AD
D101	VHDS5277B//-1	Protector (S5277B)	AB
D102	VHERD9.1ED/-1	Zener Diode (9.1V), Voltage Regulator (RD9.1E)	AB
D200	VHPGL-9NG12-1	ARI Indicator (GL-9NG12) (Yellow-green)	AD
D201	VHD1S1555V/1G	Reverse Current (1S1555V)	AB
D202	VHD1S1555V/1G	Protector (1S1555V)	AB
D203	VHD1S1555V/1G	Reverse Current (1S1555V)	AB
D204	VHD1S1555V/1G	Protector (1S1555V)	AB
D205	VHD1S1555V/1G	Protector (1S1555V)	AB
D206	VHD1S1555V/1G	Reverse Current (1S1555V)	AB
		COILS	
L1	RCILC0061AFZZ	Choke	AB
L2	RCILA0301AFZZ	Noise	AD
L3	RCILA0301AFZZ	Choke	AD
L4	RCILB0474AFZZ	LW Oscillator	AD
L5	RCILB0475AFZZ	MW Oscillator	AD
L6	RCILC0074AFZZ	MW Oscillator, 5.6μH	AB
L7	RCILC0075AFZZ	LW Oscillator, 270μH	AB
L8	RCILC0077AFZZ	Choke	AE
L9	RCILZ0076AFZZ	SK Decoder V.C.O.	AD
L10	RCILZ0085AFZZ	Trap, 19KHz	AE
L12	RCILF0067AFZZ	Choke	AC
L13	RCILC0077AFZZ	Noise	AE
		TRANSFORMERS	
T1	RCILI0269AFZZ	FM IF	AE
T2	RFILA0007AFZZ	AM IF	AH
		FILTERS	
CF1, CF2	RFILF0055AFZZ	Ceramic Filter, 10.7MHz	AE
		CONTROLS	
TC1	RTO-A1057AFZZ	Trimmer, MW Antenna	AD
TC2	RTO-A1058AFZZ	Trimmer, LW Antenna	AE
TC3	RTO-A1057AFZZ	Trimmer, RF	AD
TC4	RTO-A1058AFZZ	Trimmer, LW Oscillator	AE
TC5	RTO-A1057AFZZ	Trimmer, MW Oscillator	AD
VR1	RVR-M0220AFZZ	5K ohm (B), SK Decorder	AB
VR2	RVR-M0223AFZZ	100K ohm (B), Stereo Separation Adjust.	AB
VR3	RVR-M0230AFZZ	3K ohm (B), V.C.O. Adjust.	AB
VR101, VR102	RVR-B0219AFZZ	50K ohm (B) x 2, Volume Control Volume Assembly with Power Switch (SW2)	AM
VR103	RVR-Q0073AFZZ	50K ohm (B), Balance Control	AF
VR201	RVR-M0218AFZZ	1K ohm (B), 125Hz Level Adjust.	AB
		ELECTROLYTIC CAPACITORS	
C10	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C16	VCEAAU1EW475Y	4.7MFD, 25V, +50 –10%	AB
C17	VCEAAU1EW475Y	4.7MFD, 25V, +50 –10%	AB
C18	RC-EZ1138AFZZ	.1MFD, 50V, ±20%	AB
C28	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C29	RC-EZ1109AFZZ	4.7MFD, 25V, ±20%	AB
C30	RC-EZ1106AFZZ	10MFD, 16V, ±20%	AE
C44	RC-EZ1100AFZZ	22MFD, 6.3V, ±20%	AB
C50	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C53	VCAAKU1AA105M	.1MFD, 10V, ±20%, Aluminum	AC
C54	VCAAKU1AA105M	.1MFD, 10V, ±20%, Aluminum	AC
C55	VCAAKU1AA224M	.22MFD, 10V, ±20%, Aluminum	AB
C56	VCAAKU1AA224M	.22MFD, 10V, ±20%, Aluminum	AB
C59	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C60	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C71	RC-EZ1109AFZZ	4.7MFD, 25V, ±20%	AB
C82	RC-EZ1106AFZZ	10MFD, 16V, ±20%	AE
C89	RC-EZS476AF1C	47MFD, 16V, ±20%	AB
C91	VCEAAU1EW475Y	4.7MFD, 25V, +50 –10%	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C92	RC-EZ1114AFZZ	.47MFD, 50V, ±20%	AB
C93	RC-EZ1139AFZZ	.22MFD, 50V, ±20%	AB
C94	RC-EZ1116AFZZ	2.2MFD, 50V, ±20%	AB
C98	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C99	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C113	RC-EZ1138AFZZ	.1MFD, 50V, ±20%	AB
C114	RC-EZ1138AFZZ	.1MFD, 50V, ±20%	AB
C117	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C118	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C120	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C121	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C122	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C125	RC-EZS477AF1A	470MFD, 10V, ±20%	AC
C126	RC-EZS477AF1A	470MFD, 10V, ±20%	AC
C128	RC-EZ1075AFZZ	1500MFD, 16V, ±20%	AE
C129	RC-EZS227AF1A	220MFD, 10V, ±20%	AB
C130	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C201	VCEAAU1EW475Y	4.7MFD, 25V, +50 −10%	AB
C203	RC-EZ1138AFZZ	.1MFD, 50V, ±20%	AB
C204	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C208	RC-EZS227AF1A	220MFD, 10V, ±20%	AB
C213	RC-EZ1115AFZZ	1MFD, 50V, ±20%	AD
C215	RC-EZ1116AFZZ	2.2MFD, 50V, ±20%	AB
C221	RC-EZ1105AFZZ	47MFD, 10V, ±20%	AB
C222	RC-EZ1109AFZZ	4.7MFD, 25V, ±20%	AB

CAPACITORS

REF. NO.	PART NO.	DESCRIPTION	CODE
C1	VCTYPU1EX223M	.22MFD, 25V, ±20%, Semiconductor	
C2	VCTYPU1EX223M	.22MFD, 25V, ±20%, Semiconductor	
C3	VCTYPU1EX103M	.01MFD, 25V, ±20%, Semiconductor	
C5	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C6	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C7	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C8	VCTYPU1EX103M	.01MFD, 25V, ±20%, Semiconductor	
C9	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C12	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C13	VCCSPU1HL330J	33PF, 50V, ±5%, Ceramic	
C14	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C15	VCRYPU1HB221J	22PF, 50V, ±5%, Ceramic	
C21	VCCSAT1HL180J	18PF, 50V, ±5%, Ceramic	
C22	VCKYAT1HB331K	330PF, 50V, ±10%, Ceramic	
C23	VCTYPU1EX182J	.0018MFD, 25V, ±5%, Semiconductor	
C24	VCTYPU1EX222K	.0022MFD, 25V, ±10%, Semiconductor	
C25	VCTYAT1CY223N	.022MFD, 16V, ±30%, Semiconductor	
C26	VCTYAT1CY223N	.022MFD, 16V, ±30%, Semiconductor	
C27	VCTYAT1EX332N	.0033MFD, 25V, ±30%, Semiconductor	
C31	VCTYPU1EX103M	.01MFD, 25V, ±20%, Semiconductor	
C32	VCTYPU1EX333M	.033MFD, 25V, ±20%, Semiconductor	
C33	VCCTPU1HH331J	330PF, (TH), 50V, ±5%, Ceramic	
C34	VCTYAT1HV472K	.0047MFD, 50V, ±10%, Semiconductor	
C35	VCTYPU1EX102J	.001MFD, 25V, ±5%, Semiconductor	
C36	VCTYPU1EX102J	.001MFD, 25V, ±5%, Semiconductor	
C37	VCCSAT1HL101J	100PF, 50V, ±5%, Ceramic	
C38	VCTYAT1CY223N	.022MFD, 16V, ±30%, Semiconductor	
C39	VCTYAT1CY223N	.022MFD, 16V, ±30%, Semiconductor	
C40	VCTYPU1EX223M	.022MFD, 25V, ±20%, Semiconductor	
C42	VCTYPU1EX153K	.015MFD, 25V, ±10%, Semiconductor	
C43	VCCRPU1HH181J	180PF, (RH), 50V, ±5%, Ceramic	
C45	VCTYPU1EX183K	.018MFD, 25V, ±10%, Semiconductor	
C46	VCTYPU1EX223M	.022MFD, 25V, ±20%, Semiconductor	
C51	VCTYPU1EX122K	.0012MFD, 25V, ±10%, Semiconductor	
C52	VCTYPU1EX122K	.0012MFD, 25V, ±10%, Semiconductor	
C57	VCRYPU1HB821J	820PF, 50V, ±5%, Ceramic	
C58	VCKYAT1HB821K	820PF, 50V, ±10%, Ceramic	
C72	VCRYPU1HB331J	330PF, 50V, ±5%, Ceramic	
C73	VCRYPU1HB331J	330PF, 50V, ±5%, Ceramic	
C74	VCRYPU1HB331J	330PF, 50V, ±5%, Ceramic	
C75	VCCSAT1HL4R7C	4.7PF, 50V, ±0.25PF, Ceramic	
C76	VCRYPU1HB331J	330PF, 50V, ±5%, Ceramic	
C77	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C78	VCKYAT1HB681K	680PF, 50V, ±10%, Ceramic	
C79	VCRYPU1HB681J	680PF, 50V, ±5%, Ceramic	
C80	VCTYPU1EX122M	.0012MFD, 25V, ±20%, Semiconductor	
C81	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	
C83	VCTYAT1EX153N	.015MFD, 25V, ±30%, Semiconductor	
C84	VCTYAT1EX222N	.0022MFD, 25V, ±30%, Semiconductor	
C85	VCQYKU1HM682K	.0068MFD, 50V, ±10%, Mylar	AA
C86	VCKYAT1HB471K	470PF, 50V, ±10%, Ceramic	
C90	VCTYPU1EX123M	.012MFD, 25V, ±20%, Semiconductor	
C95	VCQSMU1HS102J	.001MFD, 50V, ±5%, Styrol	AB
C100	VCTYPU1EX122K	.0012MFD, 25V, ±10%, Semiconductor	
C101	VCTYPU1EX122K	.0012MFD, 25V, ±10%, Semiconductor	
C102	VCTYPU1EX123K	.012MFD, 25V, ±10%, Semiconductor	
C103	VCTYPU1EX123K	.012MFD, 25V, ±10%, Semiconductor	
C111	VCKYAT1HB471K	470PF, 50V, ±10%, Ceramic	
C112	VCKYAT1HB471K	470PF, 50V, ±10%, Ceramic	
C115	VCTYPU1EX122K	.0012MFD, 25V, ±10%, Semiconductor	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C116	VCTYPU1EX122K	.0012MFD, 25V, ±10%, Semiconductor	
C123	VCQYKU1HM104M	.1MFD, 50V, ±20%, Mylar	AC
C124	VCQYKU1HM104M	.1MFD, 50V, ±20%, Mylar	AC
C127	VCKZPU1HF104Z	.1MFD, 50V, +80 −20%, Ceramic	
C131	VCTYPU1EX682K	.0068MFD, 25V, ±10%, Semiconductor	
C132	VCTYAT1EX682K	.0068MFD, 25V, ±10%, Semiconductor	
C133	VCTYPU1EX103M	.01MFD, 25V, ±20%, Semiconductor	
C202	VCQSMU1HS361J	360PF, 50V, ±5%, Styrol	AB
C205	VCTYPU1EX222M	.0022MFD, 25V, ±20%, Semiconductor	
C206	VCQSMU1HS222J	.0022MFD, 50V, ±5%, Styrol	AB
C207	VCTYPU1EX473M	.047MFD, 25V, ±20%, Semiconductor	
C209	VCRYPU1HB561J	560PF, 50V, ±5%, Ceramic	
C210	VCQYKU1HM823K	.082MFD, 50V, ±10%, Mylar	
C211	VCQYKU1HM823K	.082MFD, 50V, ±10%, Mylar	
C212	VCTYAT1CY223N	.0022MFD, 16V, ±30%, Semiconductor	
C216	VCTYAT1EX103N	.01MFD, 25V, ±30%, Semiconductor	
C217	VCTYPU1EX103M	.01MFD, 25V, ±20%, Semiconductor	
C218	VCTYPU1EX103M	.01MFD, 25V, ±20%, Semiconductor	
C219	VCTYAT1CY223N	.022MFD, 16V, ±30%, Semiconductor	
C220	VCTYPU1EX153M	.015MFD, 25V, ±20%, Semiconductor	

RESISTORS

(Unless otherwise specified resistors are 1/4W, ±5%, Carbon type.)

REF. NO.	PART NO.	DESCRIPTION	CODE
R1	VRD-SU2EE391J	390 ohm	
R2	VRD-SU2EE332J	3.3K ohm	
R3	VRD-SU2EE681J	680 ohm	
R4	VRD-SU2EE331J	330 ohm	
R5	VRD-SU2EE101J	100 ohm	
R6	VRD-SU2EE331J	330 ohm	
R7	VRD-SU2EE563J	56K ohm	
R8	VRD-SU2EE473J	47K ohm	
R9	VRD-ST2EE333J	33K ohm	
R10	VRD-ST2EE224J	220K ohm	
R11	VRD-SU2EE183J	18K ohm	
R12	VRD-SU2EE334J	330K ohm	
R13	VRD-SU2EE103J	10K ohm	
R14	VRD-ST2EE272J	2.7K ohm	
R16	VRD-ST2EE392J	3.9K ohm	
R17	VRD-ST2EE564J	560K ohm	
R18	VRD-ST2EE104J	100K ohm	
R19	VRD-ST2EE225J	2.2Meg ohm	
R21	VRD-ST2EE103J	10K ohm	
R22	VRD-ST2EE102J	1K ohm	
R23	VRD-SU2EE223J	22K ohm	
R24	VRD-SU2EE332J	3.3K ohm	
R26	VRD-SU2EE104J	100K ohm	
R50	VRD-SU2EE152J	1.5K ohm	
R51	VRD-ST2EE475J	4.7Meg ohm	
R52	VRD-SU2EE475J	4.7Meg ohm	
R53	VRD-SU2EE473J	47K ohm	
R54	VRD-ST2EE473J	47K ohm	
R55	VRD-SU2EE154J	150K ohm	
R56	VRD-SU2EE154J	150K ohm	
R57	VRD-SU2EE225J	2.2Meg ohm	
R58	VRD-SU2EE225J	2.2Meg ohm	
R59	VRD-SU2EE223J	22K ohm	
R60	VRD-SU2EE223J	22K ohm	
R61	VRD-SU2EE473J	47K ohm	
R62	VRD-SU2EE473J	47K ohm	
R70	VRD-ST2EE222J	2.2K ohm	
R71	VRD-ST2EE222J	2.2K ohm	
R72	VRD-SU2EE272J	2.7K ohm	
R73	VRD-ST2EE273J	27K ohm	
R74	VRD-SU2EE823J	82K ohm	
R75	VRD-ST2EE474J	470K ohm	
R76	VRD-ST2EE122J	1.2K ohm	
R77	VRD-SU2EE472J	4.7K ohm	
R78	VRD-SU2EE472J	4.7K ohm	
R79	VRD-SU2EE472J	4.7K ohm	
R80	VRD-SU2EE472J	4.7K ohm	
R81	VRD-SU2EE682J	6.8K ohm	
R82	VRD-SU2EE822J	8.2K ohm	
R83	VRD-SU2BB332J	3.3K ohm, 1/8W, ±5%, Carbon	
R84	VRD-ST2EE682J	6.8K ohm	
R85	VRD-SU2BB391J	390 ohm, 1/8W, ±5%, Carbon	
R86	VRD-ST2EE152J	1.5K ohm	
R88	VRD-ST2EE820J	82 ohm	
R91	VRD-SU2EE222J	2.2K ohm	
R92	VRD-ST2EE273J	27K ohm	
R93	VRD-ST2EE682J	6.8K ohm	
R94	VRD-ST2EE222J	2.2K ohm	
R95	VRD-SU2EE682J	6.8K ohm	
R96	VRD-SU2EE392J	3.9K ohm	
R97	VRD-SU2EE392J	3.9K ohm	
R98	VRD-ST2EE103J	10K ohm	
R99	VRD-SU2EE103J	10K ohm	
R100	VRD-SU2EE681J	680 ohm	
R101	VRD-ST2EE563J	56K ohm	
R102	VRD-ST2EE562J	5.6K ohm (RG-5900H)	
R102	VRD-ST2EE682J	6.8K ohm (RG-5900E)	
R113	VRD-ST2EE682J	6.8K ohm	
R114	VRD-ST2EE682J	6.8K ohm	
R117	VRD-ST2EE822J	8.2K ohm	
R118	VRD-ST2EE822J	8.2K ohm	
R119	VRD-SU2EE2R2J	2.2 ohm	
R120	VRD-ST2EE2R2J	2.2 ohm	
R121	VRD-ST2EE102J	1K ohm	
R122	VRD-ST2EE150J	15 ohm	
R201	VRD-SU2EE103J	10K ohm	
R202	VRD-ST2EE272J	2.7K ohm	
R203	VRD-SU2EE332J	3.3K ohm	
R206	VRD-ST2EE222J	2.2K ohm	
R207	VRD-ST2HD561J	560 ohm, 1/2W, ±5%, Carbon	
R208	VRD-ST2EE122J	1.2K ohm	
R209	VRD-SU2EE221J	220 ohm	
R210	VRD-SU2EE472J	4.7K ohm	
R211	VRD-SU2EE332J	3.3K ohm	
R212	VRD-SU2EE394J	390K ohm	
R213	VRD-SU2EE271J	270 ohm	
R214	VRD-SU2EE102J	1K ohm	
R215	VRD-SU2EE224J	220K ohm	
R216	VRD-SU2EE224J	220K ohm	
R217	VRD-SU2EE824J	820K ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R218	VRD-SU2EE154J	150K ohm	
R219	VRD-SU2BB332J	3.3K ohm, 1/8W, ±5%, Carbon	
R220	VRD-SU2EE334J	330K ohm	
R221	VRD-SU2EE560J	56 ohm	
R222	VRD-ST2EE333J	33K ohm	
R223	VRD-ST2EE562J	5.6K ohm	
R224	VRD-ST2BB105J	1Meg ohm, 1/8W, ±5%, Carbon	
R225	VRD-ST2BB105J	1Meg ohm, 1/8W, ±5%, Carbon	
R226	VRD-ST2BB104J	100K ohm, 1/8W, ±5%, Carbon	
R227	VRD-ST2BB563J	56K ohm, 1/8W, ±5%, Carbon	
R228	VRD-ST2BB563J	56K ohm, 1/8W, ±5%, Carbon	
R229	VRD-SU2EE104J	100K ohm	
R230	VRD-ST2EE562J	5.6K ohm	
R231	VRD-SU2EE562J	5.6K ohm	
R232	VRD-SU2EE562J	5.6K ohm	
R233	VRD-SU2EE474J	470K ohm	
R234	VRD-ST2EE472J	4.7K ohm	
R235	VRD-ST2EE103J	10K ohm	
R236	VRD-ST2BB102J	1K ohm, 1/8W, ±5%, Carbon	
R237	VRD-SU2EE103J	10K ohm	
R238	VRD-SU2EE102J	1K ohm	
R239	VRD-SU2EE221J	220 ohm	
R240	VRD-ST2BB222J	2.2K ohm, 1/8W, ±5%, Carbon	

MECHANICAL PARTS

REF. NO.	PART NO.	DESCRIPTION	CODE
001	LANGF0555AFZZ	Bracket, Flywheel	AB
002	LANGH0132AFZZ	Bracket, Strengthening	
003	LCHSM0333AFZZ	Main Chassis	
004	LCHSM0334AFZZ	Sub Chassis	
005	LCHSS0153AFZZ	Head Base	
006	LHLDW1075AFZZ	Wire Holder, 60mm	AA
007	LHLDW3056AFZZ	Wire Holder	AA
008	LSLVM0089AFFW	Roller, Sub Chassis	AB
009	LSLVM0090AFFW	Spacer, Fast Forward Roller Lever	
010	LX-BZ0219AFFD	Screw, Switch ON/OFF Lever Retaining	AA
011	LX-WZ5015AGZZ	Washer, 3.1W6-0.25	AA
012	LX-WZ5018AGZZ	Washer, 2.1W4-0.25	AA
013	LX-WZ5020AGZZ	Washer, 1.7W3.2-0.25	AA
014	LX-WZ9057AFZZ	Pad, Flywheel Bracket	AA
015	LX-WZ9064AFZZ	Washer, 1.5W3.8-0.5	AA
016	LX-WZ9066AFZZ	Washer, 1.2W3.2-0.5	AA
017	MLEVF1037AFZZ	Lever, Operation	AF
018	MLEVF1038AFZZ	Lever, Eject	AD
019	MLEVF1039AFZZ	Lever, Sub Chassis Guide	AB
020	MLEVF1040AFZZ	Lever, Sensor	AC
021	MLEVF1041AFZZ	Lever, Play/Fast Forward Lock	AB
022	MLEVF1042AFZZ	Lever, Switch Lock	AB
023	MLEVP0188AFZZ	Lever, Switch ON/OFF	AB
024	MSPRC0210AFFJ	Spring, Head Azimuth Adjust	AA
025	MSPRC0212AFFJ	Spring, Supply Reel	AA
026	MSPRD0266AFFJ	Spring, Play/Fast Forward Lock Lever	AB
027	MSPRD0268AFFJ	Spring, Switch ON/OFF Lever	AB
028	MSPRT0647AFFJ	Spring, Head Base Return	AA
029	MSPRT0648AFFJ	Spring, Sub Chassis	AA
030	MSPRT0649AFFJ	Spring, Operation Lever Return	AA
031	MSPRT0650AFFJ	Spring, Play Idler	AA
032	MSPRT0651AFFJ	Spring, Fast Forward Roller Lever	AA
033	MSPRT0652AFFJ	Spring, Eject Lever	AA
034	MSPRT0653AFFJ	Spring, Switch Lock Lever	AA
035	MSPRT0660AFFJ	Spring, Pinch Roller	AA
036	MSPRT0671AFFJ	Spring, Sensor Lever	
037	NBLTK0161AFZZ	Belt, Flywheel Drive	AC
038	NBLTK0162AFZZ	Belt, Auto Stop	AB
039	NDAIR0143AFSA	Turntable, Take-up	AK
040	NDAIR0144AFSA	Supply Reel	AE
041	NFLYC0084AFZZ	Flywheel	AH
042	NIDR-0071AFZZ	Play Idler Assembly	AF
043	NROLP0061AFZZ	Idler Gear	AA
044	NROLP0062AFZZ	Idler Gear	AA
045	NROLP0063AFZZ	Gear, Cam	AB
046	NROLV0015AFZZ	Fast Forward Roller Assembly	AG
047	NROLY0035AFZZ	Pinch Roller Assembly	AE
048	NSFTT0142AFFD	Shaft, Sub Chassis Retaining	AB
050	PGIDM0079AFSA	Cassette Guide	AC
051	RHEDF0055AFZZ	Playback Head	AN
052	PZETF0153AFZZ	Insulator	AB
053	PGUMS0145AF00	Cushion Rubber	

MISCELLANEOUS

REF. NO.	PART NO.	DESCRIPTION	CODE
101	GCABA3526AFFW	Cabinet, Rear (Large)	AE
102	GCABB3526AFFW	Cabinet, Front	AE
103	GCABC3526AFFW	Cabinet, Bottom	AD
104	GCABD3526AFFW	Cabinet, Top	AF
105	GFTAC3065AFSA	Cassette Compartment	AD
106	GWAKP1084AFSA	Nose Piece (RG-5900H)	AG
	GWAKP1085AFSA	Nose Piece (RG-5900E)	AG
107	HDALP0439AFSA	Dial Plate (RG-5900H)	AE
	HDALP0441AFSA	Dial Plate (RG-5900E)	
108	HPNLC1291AFSA	Operation Panel	AG
109	HSSND0264AFSA	Dial Pointer	AC
110	JKNBK0201AFSA	Knob, Power Switch/Volume Control	AD
111	JKNBM0344AFSA	Knob, Cassette Eject Button/ Release Button for Fast Forward Winding	AB
112	JKNBM0345AFSA	Knob, Tone Control/Band Selector	AB
113	JKNBP0103AFSA	Knob, Balance Control	AB
114	HDAP-0185AF00	Backplate, Dial, Black (RG-5900E Only)	AB
115	LANGR0501AFFW	Bracket, Tuner Unit	AC
116	LANGT0071AFFW	Plate, Back Strap	AB
117	LHLDF1235AF00	Holder, P.W. Board Retaining	AE
118	LSTWC4004AFZZ	Stop Ring, Tuning Shaft	
119	LX-LZ0051AF00	Push Rivet, P.W. Board Retaining	
120	LX-NZ0052AFFD	Nut, Heat Sink Retainer	AA
121	MRODM0071AFFW	Rod, Cassette Compartment Retaining	AA
122	MSPRD0261AFFJ	Spring, Cassette Compartment	AA
123	MSPRT0321AFFJ	Spring, Dial Cord	AA
124	NGERH0058AFZZ	Idler Gear, Tuning Shaft	AC
125	NGERH0059AFZZ	Idler Gear, Tuning Shaft	AB
126	NSFTZ0072AFFW	Tuning Shaft	AE
127	PCOVU3125AFFW	Holder, Lamp (Right)	AB
128	PCOVU3126AFFW	Holder, Lamp (Left)	AB
129	PCOVZ8055AFZZ	Cover, Lamp	AA
130	PFLT-0408AF00	Felt, Balance Control	AA
131	PRDAR0220AFZZ	Heat Sink	AF
132	PSPAZ0074AFZZ	Spacer, Operation Panel	AD
132-1	Not Available	Spacer, Part of PSPAZ0074AFZZ	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
133	PSPAZ0087AFZZ	Spacer Unit (Screw, Nut, Washer)	AD
133-1	Not Available	Nut, Part of PSPAZ0087AFZZ	
133-2	Not Available	Washer, Part of PSPAZ0087AFZZ	
133-3	Not Available	Spacer, Part of PSPAZ0087AFZZ	
134	PZETF0151AFZZ	Insulator, Bottom Cover (Large)	AD
135	PSLDM3181AFZZ	Insulator, Top Cover	
CNP1	QCNCM0503SGZZ	Plug, 5 Pin	AC
CNP2	QCNCM136CAFZZ	Plug, 3 Pin	AB
136	QCNW-0321AFZZ	Speaker Lead	AP
137	QCNW-0322AFZZ	Earth Lead	AC
138	QCNW-0707AFZZ	Flat Cable, 5 Pin	AB
CNS1	QCNW-0708AFZZ	Socket, 5 Pin with Wire Leads	AE
CNS2	QCNW-0724AFZZ	Socket, 3 Pin with Wire Leads	AE
F1	QFS-A232BAFNH	Fuse, 2.3A	AC
139 L11	QFSHJ1058AFZZ	DC Supply Lead (With Coil, Fuse Holder and Socket)	AL
140	QPLGD0201AFZZ	Speaker Plug Assembly	AC
SO2	QSOCD0271AFZZ	Terminal, Speaker/DC Input	AG
SO1	QSOCZ0015AFZZ	Aerial Socket	AC
SW301	QSW-F0141AFZZ	Switch, Tape/Radio Selector	AD
SW302	QSW-F0141AFZZ	Switch, Motor ON/OFF	AD
SW1	QSW-P0258AFZZ	Switch, Band Selector and Tone Control	AM
SW2	Not Available	Switch, Power (Part of VR101, VR102)	
PL1, PL2	RLMPM0069AFZZ	Lamp, Dial Illumination	AD
MO301	RMOTM0092AFZZ	Moter	AU
141	RTUNC0135AFZZ	Tuner Unit Assembly	AY
	SPAKA0629AFZZ	Packing Add	AC
	SPAKC1448AFZZ	Packing Case (RG-5900H)	AD
	SPAKC1469AFZZ	Packing Case (RG-5900E)	AD
	SPAKX0266AFZZ	Case, Accessory Parts	AB
	SPAKX0310AFZZ	Packing Add, Bottom Side	
	SSAKH0097AFZZ	Polyethlene Bag, Set	AA
	TINSE0662AFZZ	Operation Manual (English Only, RG-5900E)	
	TINSZ0204AFZZ	Operation Manual (RG-5900H)	AF
	TINSZ0212AFZZ	Operation Manual (English/ German/French/Swedish, RG-5900E)	
	TLABS0079AFZZ	Label, F Mark	
	TLABZ0124AFZZ	Label, ANSS	
	TSPC-0615AFZZ	Specifications (RG-5900H)	AC
	TSPC-0626AFZZ	Specifications (RG-5900E)	AC
	TTAGH0120AFZZ	Tag, English/German/French/ Swedish (RG-5900H)	
	TTAGH0129AFZZ	Tag, English/German/French/ Swedish (RG-5900E)	

P.W.BOARD ASSEMBLY (Not Replacement Item)

REF. NO.	PART NO.	DESCRIPTION	CODE
	DUNTK0053AF02	Main/Sub P.W.Board (RG-5900H)	
	DUNTK0053AF04	Main/Sub P.W.Board (RG-5900E)	

A8005-3.03M
Printed in Japa